THE BRITISH JOURNAL

OF

TUBERCULOSIS

Vol. IV. April, 1910. No. 2.

SPECIAL ARTICLE.

THE ANTI-TUBERCULOSIS MOVEMENT IN CANADA.

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CANADA lacks a uniform system of registration of vital statistics. It is impossible, therefore, to give a complete return regarding the morbidity and mortality from tuberculosis.

General Considerations.

The province of Ontario has for many years had satisfactory registration, but the other provinces of the Dominion have been slow to imitate in this respect.

Our principal information with regard to numbers is contained in the decennial census returns, the last of which was taken in 1901. From this I have prepared the table on p. 74.

The rate of mortality, as shown in the table, is seen to vary considerably in the different provinces. The rate for all Canada is practically identical with that in England and Wales for the same period.

TABLE INDICATING DEATHS FROM TUBERCULOSIS IN THE PROVINCES OF CANADA, BASED ON THE RETURNS IN THE CENSUS OF 1901.

Province.	*Deaths.*		*Deaths per 100,000 Population.*	*Total Population.*
	Male.	*Female.*		
British Columbia	171	115	160	178,657
Manitoba	167	215	149	255,211
New Brunswick	265	273	163	331,120
Nova Scotia	451	460	198	459,574
Ontario	1,593	1,951	162	2,182,947
Prince Edward Island	105	119	217	103,259
Quebec	1,391	1,982	205	1,648,898
Territories	187	213	252	158,940
Unorganized Territories	33	17	95	52,709
All Canada	4,364	5,345	180	5,371,315

TABLE INDICATING COMPARATIVE MORTALITY FROM TUBERCULOSIS.

Country.	*Year.*	*Deaths from Tuberculosis (all forms) per 100,000 Population.*	*Deaths from Tuberculosis (all forms) per 1,000 Deaths.*
England and Wales...	1901	180·5	106·7
United States Registration Area ...	1901	196·9	118·9
Massachusetts	1901	234·5	138·2
CANADA	1901	180·0	119·6

Canada's death-rate from pulmonary tuberculosis, as compared with that in other countries, is shown in the following table:

TABLE INDICATING DEATHS IN VARIOUS COUNTRIES FROM TUBERCULOSIS OF THE LUNGS PER 100,000 POPULATION: ANNUAL AVERAGE 1901-1905.

Australia	88·9	Norway	196·4
Austria	334·8	Servia	279·7
Belgium	118·2	Spain	147·8
CANADA (1901)	**153·0**	Switzerland	188·6
Ceylon	93·0	United Kingdom	133·8
German Empire	185·8	England and Wales	121·5
Jamaica	153·7	Scotland	144·5
Japan	146·3	Ireland	215·3
Netherlands	133·4	United States (registration area)	169·9

A study of the deaths from tuberculosis in age periods shows what an appalling percentage of our citizens are carried off by this disease, especially during the working period of life—namely, from 15 to 44 years, and particularly in the periods 15 to 24 years and 25 to 34 years. In the United States the age period 15 to 29 years shows

33·2 per cent. of all deaths to be due to tuberculosis, and the period 30 to 44 years 25·6 per cent. In Canada, 40 per cent. of all deaths occurring between 15 and 34 years of age are due to tuberculosis, as shown in subjoined table :

TABLE INDICATING DEATH-RATE FROM TUBERCULOSIS IN CANADA AT VARIOUS AGES.

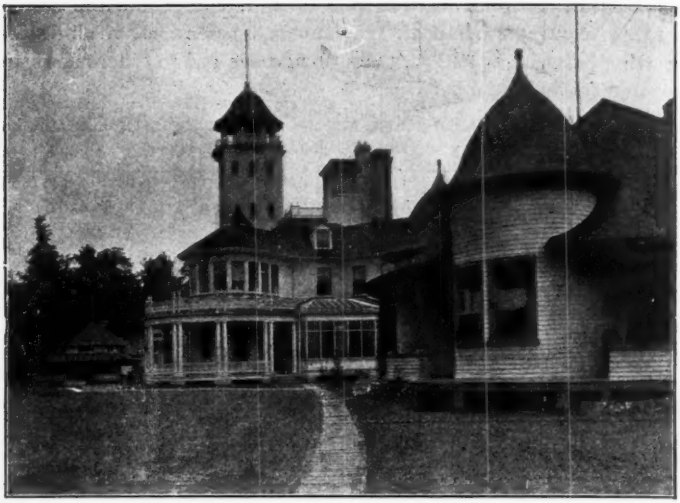
Age Period.	*Deaths from all Causes.*	*Deaths from Tuberculosis.*	*Deaths from Tuberculosis per 1,000 Deaths from all Causes.*
Under 1 year... ...	21,328	564	119·6
1 to 4 years... ...	10,019	629	62·8
5 ,, 14 ,, ...	5,160	759	147·1
15 ,, 24 ,, ...	6,088	2,512	412·8
25 ,, 34 ,, ...	5,324	2,110	396·5
35 ,, 44 ,, ...	4,672	1,275	272·9
45 ,, 54 ,, ...	4,527	828	182·9
55 ,, 64 ,, ...	5,406	543	100·4
65 ,, 74 ,, ...	7,482	349	46·7
75 and over	10,877	116	10·7

The tables which are now presented give an idea of the extent of tuberculosis in Canada—the problem with which we must deal.

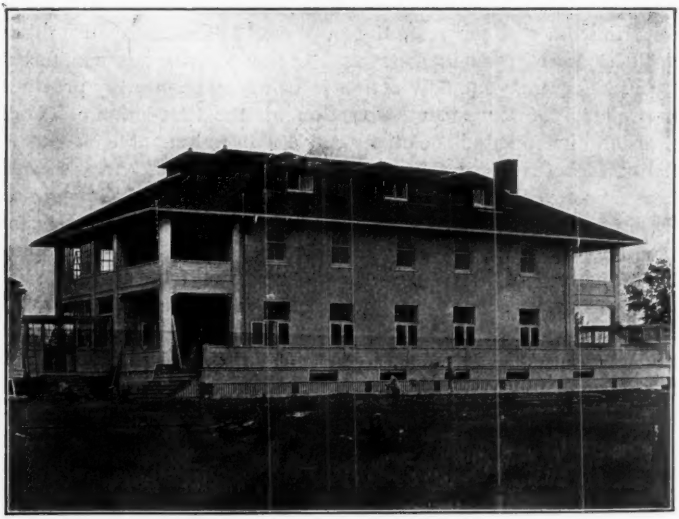
The Anti-Tuberculosis Movement in Canada.

During the past ten years the movement in Canada against tuberculosis has been gradually growing. At first activity was manifest in only a few centres, but now action is being taken in every province. Fostered by the Canadian Association for the Prevention of Tuberculosis and its affiliated societies, there has been a notable increase in activity, especially marked during the past two years. An additional impetus was given by the meeting of the International Congress in Washington, in October, 1908, which was attended by physicians, Government officials, and laymen from every province in the Dominion.

The control of tuberculosis in Canada would be a much more simple matter were it a question which could be controlled by the Federal Government and the whole matter dealt with as a national problem ; but under the provisions of the British North America Act, the control of public health matters in general—of hospitals, asylums, etc.—is delegated to the various provinces. The importance of Federal jurisdiction in this matter has not as yet sufficiently impressed itself upon our legislators for them to devise measures to overcome this difficulty. Hence in Canada we have to look to the Provincial Legislatures to deal with the problem, and by wise legislation to encourage the municipalities and private philanthropy to take up their share of the problem.



MUSKOKA COTTAGE SANATORIUM: ADMINISTRATION BUILDING.



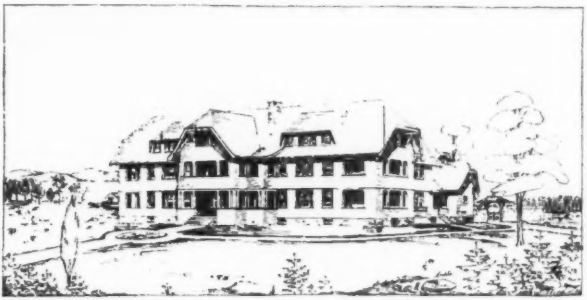
KING EDWARD SANATORIUM FOR CONSUMPTIVES, NEAR TORONTO: MULLHOLLAND BUILDING FOR ADVANCED CASES.

Federal Measures.

That with the Federal Government there is a growing sympathy with anti-tuberculosis work was shown by the debate in the House in December, when the greater part of a day was taken up with a discussion of the work being done by the Canadian Association for Prevention of Tuberculosis and its affiliated societies. For some years the Government have voted $5,000 to this Association—a small amount, it is true, but such as at least shows some appreciation of responsibility in the matter.

Tuberculosis in Immigrants.

Immigrants evidently tuberculous are not allowed to land in Canada, and any immigrant becoming a public charge within three years may be deported. These provisions are being strictly enforced.



THE LAKE EDWARD SANATORIUM, LAKE EDWARD, QUEBEC.

Tuberculosis in Indians.

The Indians are the wards of the Federal Government. There are now some 375 bands, with a population of 110,000. The death-rate is two to three times that of the general population, the excessive mortality being due principally to tuberculosis. The Department of Indian Affairs has installed a tent-hospital, in charge of a trained nurse, on a number of the reserves. Indian industrial and boarding schools as sources of infection are receiving the attention of the Chief Medical Health Officer.

Tuberculosis in Animals.

The import and export of animals is under the charge of the Federal authorities, and, by consent of the provinces, they also control disease in animals. All cattle imported for breeding purposes, or for milk production are tuberculin-tested in quarantine, unless bearing a certificate from a proper officer of the country from which imported.

Provincial Enactments for the Prevention and Arrest of Tuberculosis.

Most of the provinces have enacted special legislation regarding tuberculosis. It will be well to summarize some of the more important features :

Compulsory notification in Alberta, British Columbia, Quebec, Saskatchewan, though enacted, is not yet strictly enforced.

Notification of change of residence is enforced in Alberta.

Disinfection in case of removal or death is enforced in Alberta, British Columbia, Quebec, Saskatchewan.

THE MOUNTAIN SANATORIUM : MAIN BUILDING.

Containing staff quarters ; also patient's dining-room and kitchen.

Anti-spitting legislation has been introduced in British Columbia, Quebec, Nova Scotia.

Free Examination of Sputum in Provincial Laboratory.—All the provinces, excepting perhaps New Brunswick and Prince Edward Island, have made arrangements for this essential step in the recognition of consumptives.

Admission of Tuberculous Patients into General Hospitals.—When no special hospital for tuberculosis patients exists, British Columbia requests that all general hospitals shall care for such patients. In Alberta and Saskatchewan this is obligatory upon the general hospital if receiving Government assistance. The Government will aid in erection of special wards or pavilions for these patients.

Assistance in Erecting Sanatoriums.—British Columbia has voted sums totalling $50,000 to the Provincial Association for their building fund. Ontario will contribute (up to $4,000) one-fifth the cost of a sanatorium erected by any municipality or recognized association. This aid has been given to some seven sanatoriums. In 1906 the Legislature voted $15,000 to the Muskoka Free Hospital for Consumptives. Quebec has granted two sites—one of 400 acres and one of 137 acres—for sanatorium purposes. Nova Scotia has erected a Provincial Sanatorium of twenty-five beds at Kentville.

THE MOUNTAIN SANATORIUM: WOMEN'S SHACK.
Accommodating twelve patients. Cost $800.

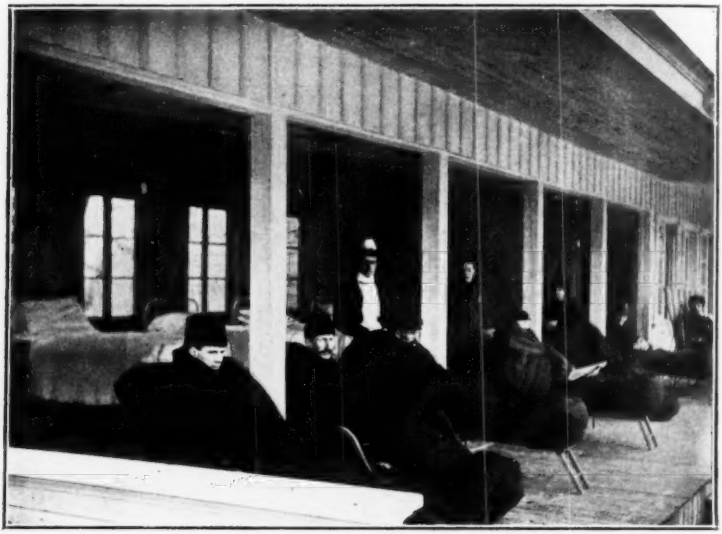
Assistance in Maintenance.—British Columbia gives a *per diem* grant of fifty cents to all patients in sanatoriums and special hospitals. Ontario grants $3.00 per week to all patients in sanatoriums who contribute not over $4.90 per week. This has amounted to $87,000 during the past five years, and last year in the Nova Scotia Sanatorium patients paid $5.00 per week, the province meeting the deficit.

Other Special Provincial Measures.—In Saskatchewan, in localities where no hospitals exist, the province provides destitute cases with food-supplies. In Ontario no sanatorium may be built within 150 yards of any residence. Quebec has enacted model legislation regarding

construction of habitations, respecting factories, and educational institutions. In 1909 a Royal Commission on Tuberculosis was named, and their report will doubtless guide further legislative action.

Municipal and Local Measures against Tuberculosis.

These need not be fully detailed. A few cities and towns have adopted notification—some compulsory, others voluntary. Most of the large cities and towns have anti-spitting ordinances, while the street railway companies, almost without exception, have notices



THE MOUNTAIN SANATORIUM: MEN'S SHACK.

Accommodating ten patients. Cost $800. In the centre of men's and women's shacks is a heated dressing-room, with lockers and bath.

posted. The Government railways have similar enactments, with a maximum penalty of twenty dollars. The Board of Railway Commissioners have issued instructions to all railways in Canada regarding spitting in carriages and railway-stations, also ordering regular and special disinfection of sleeping-cars. The proper cleansing, heating and ventilation of all passenger-cars are also ordered.

The Milk-Supply and Tuberculosis.

For nearly two years the Milk Commission of the Canadian Medical Association have been endeavouring to increase interest in the larger centres in a purer milk-supply. Local sub-commissions

THE LAURENTIAN SANATORIUM, STE. AGATHE DES MONTS, P.Q.

Erected by the Laurentian Society. Cost about $120,000.

have been appointed, and all are working toward the desired end. At the present session of the Ontario Legislature, the Milk Commission appointed by the Government of Ontario has brought in its report with its recommendations regarding the milk-supply of the province. The cities of Quebec, Moncton (N.B.), Portage la Prairie, Winnipeg (Manitoba), Regina (Saskatchewan), Calgary, Edmonton (Alberta), demand compulsory tuberculin tests in all herds supplying milk to the city. British Columbia, Manitoba, and Quebec have legislation permitting municipalities to adopt such by-laws. A portion of the milk-supply of the cities of Ottawa and Toronto is pasteurized.

Tuberculosis in Children.

This question has received special attention in the surgical wards of the Hospital for Sick Children and the Lakeside Home, Toronto, when the children spend the warmer months on broad verandas. In Montreal the Children's Memorial Hospital deals largely with cases of tuberculosis, and has special pavilions and porches for open-air treatment. The Toronto Free Hospital for Consumptives has a special ward for children with pulmonary tuberculosis, and the Heather Club, Toronto, has a visiting nurse for work amongst tuberculous children.

Anti-Tuberculosis Associations in Canada.

The central organization is the Canadian Association for Prevention of Tuberculosis, with its chief office at Ottawa. Affiliated with this are the provincial associations of British Columbia, New Brunswick, Prince Edward Island. The other provinces have no general associations, but have most of their local associations in direct affiliation—in Ontario, seventeen; in Quebec, four; in Nova Scotia, twelve; while others are being organized this year by Dr. George D. Porter, the Associate-Secretary of the Association. Through the greater part of the year this energetic physician is moving about in the different provinces, aiding the local associations already formed and assisting to create local interest in other centres. Many of the newly-formed leagues are actively at work studying how best to meet local conditions, and instituting relief measures. The New Brunswick Association also have a paid travelling lecturer and organizer.

The Canadian Association is endeavouring mainly to work along lines of education, at the same time suggesting legislation when it may seem desirable, and assisting all the various agencies which have been instituted and which may request aid from the central organization.

THE PROVINCIAL SANATORIUM, KENTVILLE, NOVA SCOTIA: WINTER SCENE.

Tuberculosis Exhibitions.

In 1906, at the time of the meeting of the British Medical Association in Toronto, the travelling exhibit of the National Association of the United States was opened for two weeks, brought to Toronto by the National Sanitarium Association. The exhibit was visited by 13,000 people. Following this, Dr. C. A. Hodgetts, the Secretary of the Provincial Board of Health of Ontario, brought together a splendid exhibit, known now as the Ontario Government Tuberculosis

HAMILTON HEALTH ASSOCIATION: DAY DISPENSARY.
Headquarters for city dispensary and visiting nurse.

Exhibit, which has visited many of the towns of Ontario, and has been repeatedly asked for in other provinces and the adjoining States. For six weeks in the autumn it appears at the rural fairs.

In November and December, 1908, following close upon the International Congress at Washington, an exhibit was organized in Montreal through the Montreal League, assisted by practically all the philanthropic organizations in the city, both Roman Catholic and Protestant. For two weeks it was open, visited by all the school and convent children of the city. The results of the exhibition can

scarcely be measured. It was attended by over 50,000 people, and marks a great increase in interest in anti-tuberculosis work in Montreal.

The Christmas Tuberculosis Stamp Movement.

In 1908 this device was adopted by the British Columbia Association, the Hamilton Health Association, and the Muskoka Free Hospital. Last year the Halifax League and others also used it as a means of increasing interest in their work and to secure funds, in all cases with substantial results.

Sanatoria and Other Institutions for Consumptives and Tuberculous Subjects.

The first association to build a sanatorium in Canada was the National Sanitarium Association, organized in 1896, which opened the Muskoka Cottage Sanatorium in 1897. Later it built the Muskoka Free Hospital for Consumptives, which was opened in 1902. In ten years this Association has had over 3,000 patients under treatment.

The first dispensary in Canada was that of the Montreal League, opened in November, 1904, which has now become the Royal Edward Institute, with splendidly-equipped quarters, the gift of Colonel Jeffery H. Burland and his sisters, and is the centre of the movement in Montreal.

The dispensary and the visiting nurse are becoming more and more recognized as factors of prime importance in the combat, and it is a hopeful sign to see the number of these steadily increasing.

In many cities the local organizations are moving in the establishment of dispensaries, maintenance of visiting nurses, and in the provision of food, clothing, and sanitary supplies for poor patients. Where sanatoriums and special hospitals are not available, tents or other conveniences for outdoor living are supplied. That there is a healthy growing interest in the work throughout the Dominion will be seen by a comparison of the subjoined list of special hospitals, sanatoriums, and dispensaries, with other lists published by the writer in 1906[1] and in 1908.[2]

Dispensaries for Tuberculous Patients.

These have been started in many districts, and are doing good work. The following are the principal ones :

1. *The Royal Edward Institute,* Montreal, P.Q., formerly the dispensary of the Montreal League for the Prevention of Tuberculosis. Opened six days weekly. Verandas and roof garden, serving as day camp for patients in attendance. Established in November, 1904.

[1] *British Medical Journal*, p. 689, September 22, 1906.
[2] Transactions of the International Congress on Tuberculosis, Washington, vol. iv., p. 135, 1908.

2. *Tuberculosis Dispensary and Clinic*, Toronto General Hospital, Toronto, Ontario. Opened two days weekly. Established January, 1906.
3. *Tuberculosis Dispensary and Clinic*, St. Michael's Hospital, Toronto, Ontario. Opened one day weekly. Established January, 1909.
4. *Tuberculosis Dispensary of Hamilton Health Association*, Hamilton, Ontario. Opened two days weekly. Established in 1906.
5. *The May Court Tuberculosis Dispensary*, Ottawa, Ontario. Opened daily. Established June, 1908.

THE SOUTHAM HOME FOR CHRONIC TUBERCULOUS CASES.
Accommodating twenty-four patients. Located on City Hospital grounds.

6. *The Winnipeg Dispensary*, conducted at Winnipeg General Hospital by the Winnipeg Anti-Tuberculosis Association. Opened daily. Established 1909.
7. *The Anti-Tuberculosis Society for King's and Queen's County* conducts a dispensary at Charlottetown, P.E.I. Established 1909.
8. *Dispensary of the St. John Anti-Tuberculosis Association*, St. John, N.B. Established, 1910.

Visiting Nurses for Tuberculous Cases.

One or more visiting nurses are connected with the work of the various dispensaries, some of whom are maintained by the dispensary, others by a different organization. For example, the Victorian Order

of Nurses work in conjunction with the Royal Edward Institute, Montreal, while the visiting nurse of the Toronto dispensaries is paid by the city of Toronto. In addition to the visiting nurses attached to the dispensaries listed above, the following associations have at least one :

The Colchester Association for Prevention of Tuberculosis, Truro, N.S.

The Halifax League for Prevention of Tuberculosis, Halifax, N.S.

The Toronto Free Hospital for Consumptives, Toronto, Ontario.

The Heather Club, Hospital for Sick Children, Toronto, Ontario.

Space will not permit even a short description of the work being done by the various associations and leagues, nor of the equipment and the results of treatment in the various sanatoriums, but the list of institutions will convey some idea of the start which has been made in the provision of beds. There is, however, a general feeling throughout the Dominion that, to wage a winning warfare, prevention in the home is more important than institutional treatment; and, lacking sufficient beds for all, the proper care of the patient in his home, with the avoidance of infection, forms the greater part of the work before us. This means perfecting local organization, and it is toward this end that the Canadian Association is bending its energies.

LIST OF SPECIAL HOSPITALS AND SANATORIUMS IN CANADA.

(Where conducted by an Association the name appears in brackets.)

Ontario.

Muskoka Cottage Sanatorium, Gravenhurst : 75 beds ; $12 to $18 weekly. For incipient cases. (The National Sanitarium Association.)

Muskoka Free Hospital for Consumptives, Gravenhurst : 140 beds ; patient pays in part, if able. Dr. W. B. Kendall, Physician-in-charge to both institutions. (The National Sanitarium Association.)

The Minnewaska, Gravenhurst : 25 beds ; $8 to $15 weekly. For incipient cases only. Dr. C. D. Parfitt, Resident Physician.

The Mountain Sanatorium, Hamilton : For incipient cases ; 35 beds, for Hamilton and Wentworth County. Dr. J. H. Holbrook, Physician-in-charge. (Hamilton Health Association.)

Toronto Free Hospital for Consumptives, Weston : 100 beds. For advanced and far-advanced cases, from City of Toronto. Patient pays in part, if able.

The Southam Home, on grounds of City Hospital, Hamilton, Ontario: For advanced cases; number of beds, 25. Admissions from city and county. Patients pay in part, if able. Dr. Walter F. Langrill, Superintendent. (Hamilton Health Association.)

St. Catherines Sanatorium for Consumptives, St. Catherines: For cases from city and county of Welland. Patients pay in part, if able; 15 beds.

The Lady Grey Hospital, Ottawa: For advanced cases; 45 beds. Patients pay in part, if able. Opened February, 1910. (The Ottawa Anti-Tuberculosis Association.)

King Edward Sanatorium for Consumptives, Weston. A hospital for advanced cases; 25 beds; $15 weekly; semi-private wards, $8.00. Dr. W. J. Dobbie, Physician-in-charge.

The Alexandra Hospital for Consumptives, London, Ontario; 40 beds. For patients from city of London and county of Middlesex. Pay in part, if able. Dr. E. A. McCulloch, Superintendent. (London Health Association.)

The Sir Oliver Mowat Memorial Hospital for Consumptives, Kingston, Ontario; on grounds of the General Hospital; 25 beds. For patients from Kingston and county of Frontenac. Pay in part, if able. (To open July, 1910.)

Tents and other appliances for treatment of tuberculosis are in use in Galt, Stratford, Peterboro, Ottawa, Kingston, London. Some are in connection with the local general hospital (Kingston); others are provided by the municipality (Galt); others by local charitable associations (Ottawa, Stratford), or by private philanthropy (London).

Quebec.

L'Hospital des Incurables, Montreal: 20 beds for consumptives.

The Grace Dart Home, Montreal: For advanced cases; 20 beds. Organized in 1907 by private subscription.

Brehmer Rest, Ste. Agathe des Monts. For patients not definitely tuberculous. Patients pay $4.00 weekly, if able. Dr. A. J. Richer, Physician-in-charge.

Lake Edward Sanatorium, Lake Edward, Quebec: 30 beds. Individual wards with balconies. For incipient cases. Dr. W. E. Ainley, Superintendent.

Laurentian Sanatorium, Ste. Agathe des Monts, P.Q.: 50 beds. Incipient cases. Charges, $7.50 per week. To open September 1, 1910. At present in temporary quarters. Dr. J. Roddick-Byers, Medical Director. (The Laurentian Society.)

NOVA SCOTIA.

Provincial Sanatorium, Kentville : 25 beds. For residents of the province. Patients pay $5.00 weekly. Dr. Miller, Resident Physician.

Halifax League provides movable pavilions for the use of poor patients.

MANITOBA.

Manitoba Sanatorium for Consumptives, Ninette : For incipient cases ; 60 beds. Patients pay in part when able. For residents of Manitoba. Dr. D. A. Stewart, Superintendent.

Winnipeg City Hospital has a separate pavilion for advanced cases. 30 beds.

BRITISH COLUMBIA.

Tranquille Sanatorium, Kamloops : For incipient cases ; 30 beds. Free. Patients pay in part, if able. Admission at present limited to residents of British Columbia. Dr. James J. Thomson, Superintendent. (The British Columbia Anti-Tuberculosis Society.)

Riverside Cottage, Kamloops : For incipient cases ; 15 beds. Patients pay full rates. Dr. R. W. Irving, Attending Physician.

The following are to be classed as projected institutions :

ONTARIO.

Huron County will probably build a county sanatorium.

Brantford has plans under way for a sanatorium for the city, and for county of Brant.

Windsor is planning a local sanatorium.

NEW BRUNSWICK.

The Provincial Government have given assurances to the provincial society that they will assist in securing a sanatorium for the province. The site will be selected shortly.

ORIGINAL PAPERS.

SANATORIUM STATISTICS.

By NOEL D. BARDSWELL,
M.D., M.R.C.P., F.R.S.E.,
Medical Superintendent of King Edward VII. Sanatorium.

Sanatorium statistics are designed to afford reliable information regarding—(1) The condition of each patient treated (*a*) on admission and (*b*) on discharge: what may be termed the *immediate* results of treatment; and (2) the condition of each patient at periods subsequent to discharge: in other words, the *ultimate* results of sanatorium treatment.

Statistics of Immediate Results.

Much statistical evidence has been published during the past ten years as to the immediate results of sanatorium treatment. The value of a great deal of this data, however, has been discounted by the fact that the terms used to describe the condition of patients on admission and on discharge have not been fully defined.

Sanatorium physicians almost invariably classify their patients into various groups, according to the extent and severity of the disease present. The methods of classification in common use are numerous—an eloquent testimony to the perplexities of grouping. It is too much to hope that any one uniform method of classification will be adopted, even in this country. Fortunately, it is not very material what method is used to describe the condition of patients when admitted and when discharged, so long as the terms used for the purpose are strictly defined. But definitions are absolutely essential; otherwise statistics compiled by different methods cannot be compared.

The following methods of classification are, I think, as satisfactory as any:

I. Classification adopted by a Nomenclature Committee of the American National Association for the Study and Prevention of Tuberculosis.

1. *Classification on Admission*—(*a*) *Incipient Cases.*—Slight initial lesion in the form of infiltration limited to the apices, or a small part of one lobe. No tuberculous complications. Slight or no consti-

tutional symptoms (particularly including gastric or intestinal disturbances, or rapid loss of weight). Slight or no elevation of temperature, or acceleration of pulse at any time during the twenty-four hours, especially after rest. Expectoration usually small in amount or absent. Tubercle bacilli may be present or absent. (*b*) *Moderately Advanced Cases.*—No marked impairment of function, either local or constitutional. Localized consolidation moderate in extent, with little or no evidence of destruction of tissue; or disseminated fibroid deposits. No serious complications. (*c*) *Far Advanced Cases.*—Marked impairment of function, local and constitutional. Localized consolidation intense; or disseminated areas of softening; or serious complications. (*d*) *Miliary Tuberculosis Cases.*

2. *Classification on Discharge*—(*a*) *Progressive* (*Unimproved*).—All essential symptoms and signs unabated or increased. (*b*) *Improved.*—Constitutional symptoms lessened or entirely absent; physical signs improved or unchanged; cough and expectoration with bacilli usually present. (*c*) *Arrested.*—Absence of all constitutional symptoms; expectoration and bacilli may or may not be present; physical signs stationary or retrogressive; the foregoing conditions to have existed for at least two months. (*d*) *Apparently Cured.*—All constitutional symptoms and expectoration with bacilli absent for a period of three months; the physical signs to be those of a healed lesion.

II. Classification adopted by the International Tuberculosis Committee.

This grouping is adopted in many sanatoria in all parts of Europe.

International Statistics on Tuberculosis (Morbidity) Classification Turban-Gerhardt (Imperial German Board of Health).

R = *Right.* *L* = *Left.*

Group I.—Disease of slight severity, limited to small areas of one lobe; that, for instance, in case of infection of both apices does not extend beyond the spine of scapula and the clavicle, or in case of affection of one apex, frontal, beyond the second rib.

Group II.—Disease of slight severity, more extensive than 1, but affecting, at most, the volume of one lobe—or severe disease, extending, at most, to the volume of one half-lobe.

Group III.—All cases extending beyond 2, and all such with considerable cavities.

By disease of slight severity is to be understood : disseminated foci manifested by slight dulness, unclear rough or weak vesicular, vesico-bronchial, or broncho-vesicular breathing and fine and medium râles.

By severe disease ; compact infiltration recognized by great dulness, very weak (indeterminate) broncho-vesicular, or bronchial indefinite breathing, with or without râles.

Considerable cavities to be recognized by tympanitic sound, amphoric breathing, and extensive coarse consonating râles, come under stage 3.

Pleuritic dulness, if only of a few centimetres' extent, is to be left out of account; if it is considerable, pleuritis should be specially mentioned under tuberculous complications.

The stage of disease is to be indicated for each side separately. The case, as a whole, is to be classified according to the more diseased side ; for example, *R2 L1 = Stage 2*.

Statistics of Ultimate Results.

Statistics showing the ultimate results of sanatorium treatment are nowadays of much more value than similar data dealing with immediate results. Our information as to the permanency or otherwise of the benefit received by consumptives treated in sanatoria is very meagre. This should be remedied if possible. It is unnecessary to say anything as to the difficulties of collecting data as to after-histories. The best plan, in my experience, is to send annually to every patient a printed request for information (1) as to present state of health, and (2) as to present capacity for work. The less information asked for, the greater is the likelihood of getting a reply. The enclosing of a stamped addressed envelope for the answer is, I think, a sound investment. If this method does not succeed, the information must be sought for in other ways—from the doctor or friends of the patient, for instance. The data obtained every year should be entered in the sanatorium records in a way which allows of statistics being easily prepared from them. For some time I have made my entries in a book specially prepared for this purpose. This book requires no further description than the following short specimen extracts. I might add, however, that I have found it most serviceable :

GROUP I.—YEAR OF DISCHARGE, 1901.

Name.	*Sex.*	*Age.*	*Occupation.*	*Condition on Discharge.*	*Condition in Successive Years.*						
					1902.	1903.	1904.	1905.	Etc., Etc.	1920.	Etc., Etc.
Smith, J. R. ...	M.	43	Solicitor.	Apparently cured.	Well.	Well.	Well.	Well.		Well.	
Brown, A. J. ...	M.	20	Clerk.	Arrested.	Well.	Well.	Well.	Well.		Well.	
Et seq.					*Et seq.*				*Et seq.*		

GROUP II.—YEAR OF DISCHARGE, 1901.

Name.	*Sex.*	*Age.*	*Occupation.*	*Condition on Discharge.*	*Condition in Successive Years.*						
					1902.	1903.	1904.	1905.	Etc., Etc.	1920.	Etc., Etc.
Robinson ...	F.	23	Nil.	Arrested.	Well.	Well.	Well.	Alive.		Dead.	
Williams ...	M.	30	Land agent.	Apparently cured.	Well.	Well.	Well.	Well.		Well.	
Et seq.					*Et seq.*				*Et seq.*		

GROUP III.—YEAR OF DISCHARGE, 1901.

Name.	*Sex.*	*Age.*	*Occupation.*	*Condition on Discharge.*	*Condition in Successive Years.*						
					1902.	1903.	1904.	1905.	Etc., Etc.	1920.	Etc., Etc.
Jones, A. ...	M.	24	Butcher.	Arrested.	Well.	Alive.	Lost.				
Henry, Mrs. ...	F.	29	Housewife.	Progressive.	Alive.	Dead.					
Et seq.					*Et seq.*				*Et seq.*		

Another method of recording after-history results has been suggested to me by Professor Karl Pearson. By this method the following card is filled up for each patient on discharge, and the card is subsequently brought up to date every year :

VITAL STATISTICS OF SANATORIA PATIENTS.

Name of Sanatorium .....

Patient's Name .....

Number in Register .....

Type of Case .....

Occupation or Class .....

Date of Birth .....

Date of Admission .....

Date of Discharge .....

Condition on Discharge .....

If Dead (date of death) .....

If Lost Sight of (date when last heard from) .....

If Living (date when last heard from) .....

[To be filled in in pencil, and corrected each year.]

Remarks :

The statistical tables, which are readily prepared from the data thus collected, should show the condition in successive years of all the patients discharged during any given year. The more usual method of recording the after-histories of patients discharged only a few months, along with those of patients discharged some years previously, is an unsatisfactory one.

With regard to the terms used in connection with after-history results, I would suggest the following :

Well.—In good health and at work.
Alive.—Indifferent health and unfit for work.
Dead.
Lost sight of.

Such terms as "cured," "apparently cured," etc., are not to be recommended in this respect.

The following tables fulfil the necessary conditions, and are self-explanatory :

Statistics of Ultimate Results.

Scheme A.

All Cases Considered Together.

Year of Discharge.	*Number Discharged.*	*Number Well or Alive in Each Successive Year after Discharge.*		*Number Known to be Dead in 1910.*	*Number Lost Sight of in 1910.*
		1908–09.	1909–10.		
1907–08	150	108	89	50	11
1908–09	150	—	110	30	10

Group I. Considered Separately.

Year of Discharge.	*Number Discharged.*	*Number Well or Alive in Each Successive Year after Discharge.*		*Number Known to be Dead in 1910.*	*Number Lost Sight of in 1910.*
		1908-09.	1909–10.		
1907–08...	50	47	41	5	4
1908–09...	50	—	45	2	3

Group II. Considered Separately.

Year of Discharge.	*Number Discharged.*	*Number Well or Alive in Each Successive Year after Discharge.*		*Number Known to be Dead in 1910.*	*Number Lost Sight of in 1910.*
		1908–09.	1909–10.		
1907–08	50	41	33	12	5
1908–09	50	—	39	7	4

Group III. Considered Separately.

Year of Discharge.	*Number Discharged.*	*Number Well or Alive in Each Successive Year after Discharge.*		*Number Known to be Dead in 1910.*	*Number Lost Sight of in 1910.*
		1908–09.	1909–10.		
1907–08	50	20	15	33	2
1908–09	50	—	26	21	3

The following table (Scheme B) represents a very good method of showing at one time the condition on admission, on discharge, and at a subsequent period, of all patients under treatment during successive years :

Scheme B.

Condition on Admission.	Condition on Discharge.	Condition in 1910.	Discharged during the Year. 1904.	1905.	1906.	1907.	1908.	1909.
Incipient	Apparently Cured	Well	15	...	..	...	...	...
		Alive	—	...	...	...	...	...
		Dead	4	...	...	...	...	...
		Unknown	1	...	...	...	...	...
	Arrested	Well	1	...	..	...	...	...
		Alive	—	..	...	...	.	...
		Dead	—	...	...	...	...	...
		Unknown	1	...	...	...	...	...
	Improved	Well	4	...	...	...	...	...
		Alive	—	...	...	...	...	...
		Dead	—	...	...	...	...	...
		Unknown	—	...	...	...	...	...
	Progressive	Well	—	...	...	...	...	...
		Alive	—	...	...	...	...	...
		Dead	—	...	...	...	...	...
		Unknown	—	...	...	...	...	...
Died in Sanatorium			—	...	...	...	...	...
Moderately Advanced	Apparently Cured	Well	10	...	...	...	...	...
		Alive	—	...	...	...	...	...
		Dead	–	...	...	...	...	...
		Unknown	—	...	...	...	...	...
	Arrested	Well	9	...	...	...	...	...
		Alive	1	...	...	...	...	...
		Dead	12	...	...	...	...	...
		Unknown	3	...	...	...	...	...
	Improved	Well	8	...	...	...	...	...
		Alive	3	...	...	...	...	...
		Dead	4	...	...	...	...	...
		Unknown	—	...	...	...	...	...
	Progressive	Well	—	...	...	...	...	...
		Alive	—	...	...	...	...	...
		Dead	1	...	...	...	...	...
		Unknown	—	...	...	...	...	...
Died in Sanatorium			—	...	...	...	...	...
Far Advanced	Arrested	Well	3	...	...	...	...	...
		Alive	—	...	...	...	...	...
		Dead	15	...	...	...	...	...
		Unknown	—	...	...	...	...	...
	Improved	Well	—	...	...	...	...	...
		Alive	—	...	...	...	...	...
		Dead	6	...	...	...	...	...
		Unknown	—	...	...	...	...	...
	Progressive	Well	—	...	...	...	...	...
		Alive	—	...	...	...	...	...
		Dead	17	...	...	...	...	...
		Unknown	1	...	...	...	...	...
Died in Sanatorium			3	...	...	...	...	...
Summary		Well	50	...	...	...	...	...
		Alive	4	...	...	...	...	...
		Dead	59	...	...	...	...	...
		Unknown	6	...	...	...	...	...
Died in Sanatorium			3	...	...	...	...	...
Total			122	...	...	...	..	...

If all sanatoria published their results according to Schemes A and B, there would no longer be justification for complaint as to the preparation of sanatorium statistics.

THE ORTHODIAGRAPH IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

By J. F. HALLS DALLY,
M.A., M.D. CANTAB., M.R.C.P. LOND.,
Hon. Physician to the St. Marylebone General Dispensary; School Medical Officer to the London County Council.

At various times various methods of physical investigation have been pressed into the service of medicine, and, for the most part, each fresh discovery has added to our store of clinical knowledge. It has been remarked with truth that "science is measurement," and in the diagnosis of intrathoracic pathological conditions accurate measurement has proved to be of the greatest use. The stethometer and the spirometer, each in its own sphere, have afforded us many valuable indications; in some directions the orthodiagraph[1] has revealed more.

In studying changes which occur in the shape, size, and position, of the internal organs as a result of their functional activity, previous observers have worked at a disadvantage, in that practically all the methods used by them in their researches have involved more or less disturbance of the normal arrangement of parts, and therefore of function. During the past eleven years movements of the thoracic contents have been studied by means of the observation of their shadows on a fluorescent screen. But these X-ray methods, although affording some degree of assistance, have done no more than approximate to exactitude, owing to the distortion caused by shadow magnification of the object. If, however, one can not only see what is going on inside the trunk, but can also accurately measure the vital movements, great light is immediately thrown upon the phenomena of respiration and circulation.[2]

In the orthodiagraph I was fortunate enough to find a machine which fulfils these conditions, and I began work with this instrument in 1907, using it to follow out a line of work started four years previously.

[1] Walsham and Halls Dally: "The Orthodiagraph," *British Medical Journal*, 1907, September 14, p. 651.

[2] Halls Dally: (1) Proceedings of the Royal Society, Series B, vol. lxxx., 1908; (2) Proceedings of the Anatomical Society of Great Britain and Ireland, October, 1908; (3) Proceedings of the International Congress of Electrology and Radiology, Amsterdam, August, 1908.

The orthodiagraph (Fig. 1) consists of a heavy iron column (L), to which is attached an oblong frame (E) on which the bar (D) runs backwards and forwards. On this three parallel bars are clamped (S, B, and P), carrying respectively a fluorescent screen, metal diaphragm, and recording pencil. The small metal dot in the middle of the screen, the centre of the aperture in the diaphragm, the middle

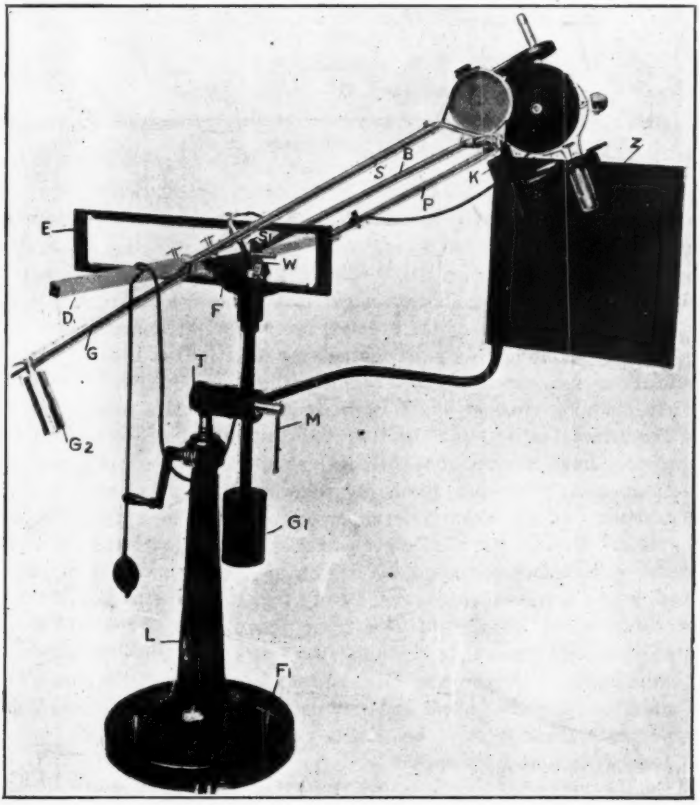


FIG. 1.—PHOTOGRAPHIC REPRESENTATION OF THE ORTHODIAGRAPH.

of the anode, and the writing-point, are all in a mathematically straight line. By cutting off all the rays projected from the anode with the exception of the central pencil of rays, and by placing the patient between the screen and the fluorescent tube, this "normal incident ray" can be conducted round the shadow margin of the organ to be mapped out, and thus an exact record of its size and movements can be traced on a sheet of paper stretched on the board (Z).

The present position of Roentgen diagnosis has been summarized by Professor Albers-Schoenberg of Hamburg, who states that this method will not detect catarrhal conditions, but can always discover foci of infiltration before they can be found out by percussion, and in many cases before they can be perceived by auscultation.

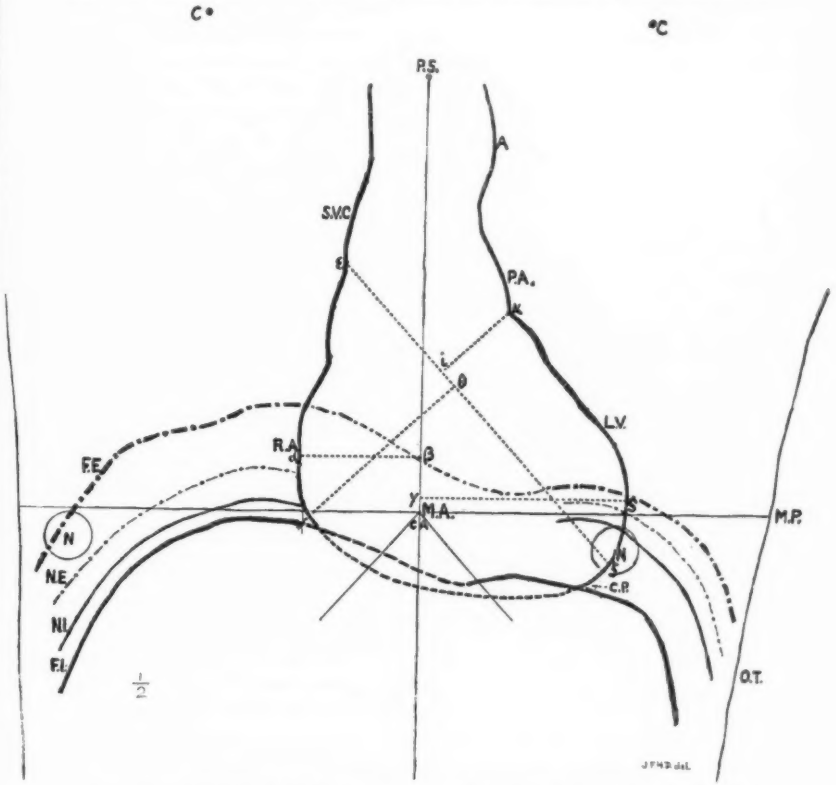


FIG. 2.—ORTHODIAGRAM SHOWING POSITIONS OF DIAPHRAGM IN RELATION TO VARIOUS RESPIRATORY MOVEMENTS.

F.E. Forced expiration.
N.E. Normal expiration.
O.T. Outline of trunk.
N.I. Normal inspiration.
F.I. Forced inspiration.
M.P. Meso-metasternal plane.

"In doubtful cases Roentgenologic examination frequently yields the deciding factor. . . . One is not justified in basing a diagnosis of pulmonary tuberculosis upon indefinite apical shadows when the clinical symptoms are negative."

The orthodiagraph presents an accurate method, not only of observing differences in transradiancy due to pathological processes

within the chest, but also of registering the exact size and position of areas of infiltration, consolidation, and excavation. Orthodiagrams taken at intervals of three months are of great use in determining whether the disease is stationary or progressive.

When the lung becomes invaded by a tuberculous process, the mechanism of respiration is altered, usually in the direction of lessened movement on the side affected, with compensatory movement on the unaffected side. Later limitation of movement is usually present on both sides, the diminution being more marked on the side which is the more involved. The orthodiagraph is particularly useful in recording the features of such cases in which the difference in contour of the outlines of the thorax on each side is apparent, and coincides, it may be, with lessened diaphragmatic action. From the clinical side, Dr. Squire, of Mount Vernon Hospital, has pointed out that, as the result of practical experience, it is found that small active pulmonary consolidations restrict the respiratory movements more than larger consolidations which are inactive. At a still later period in the history, owing to the pain of pleurisy or to the extensive spread of the disease, the movement of the greater part or of the whole of the chest may be extremely limited.

With tubes of powerful irradiation, supplemented if necessary by instantaneous radiography, tuberculous bronchial glands at the root of the lung, or deep within its substance, may be detected "where neither percussion nor auscultation can reach them, and before the bacteriological test has determined their etiology, and only the symptom-complex suggests tuberculous disease."[1] Very early in the disease there may be unilateral limitation of movement of the diaphragm, though this does not occur in every case, or less frequently jerky spasmodic movements may occur on the affected side. In the absence of pleurisy, and possibly of some compensatory lessening of diaphragmatic movement which appears temporarily to take place in correspondence with increase in costal respiration on the same side in healthy people, the presence of this diaphragm phenomenon arouses grave suspicion that the tuberculous process is already active. In some cases successive observations have shown that this limited range of movement has again become more free under the influence of suitable measures.

In 1908 reference was made by Dr. Pasteur[2] to a simplified and portable form of orthodiagraph for use at the bedside, which he and Mr. Cecil Lyster had employed with much success in the diagnosis of various chest affections.

[1] Leonard: Discussion on "The Diagnosis of Pulmonary Tuberculosis by means of the Roentgen Rays," *British Medical Journal*, September 12, 1908, p. 706.

[2] Pasteur: The Bradshaw Lecture before the Royal College of Physicians on "Massive Collapse of the Lung," 1908.

In all cases a conservative view should be taken. Orthodiagraphic methods have undoubtedly afforded valuable assistance to the physician, but nevertheless it should be remembered that they have their limitations in that no X-ray method of itself is competent to give information as to whether a given well-marked shadow is due to consolidation the result of active disease, or whether the condition may have remained quiescent for years. Hence in every case orthodiagraphic investigation should go hand in hand with a thorough investigation from the point of view of the clinician, and the findings on both sides should be correlated with a careful study of the symptomatology.

"THE SHEFFIELD OPEN-AIR SCHOOL."

By RALPH P. WILLIAMS,
M.D., B.S., D.P.H.,
Professor of Public Health in the University of Sheffield; School Medical Officer to the City of Sheffield.

One of the latest developments in Preventive Medicine has been the establishment of Open-Air Recovery Schools. This movement, originating at Charlottenburg in 1904, quickly spread to other towns in Germany, and extended to England in 1907, when the London County Council opened their first open-air school at Bostall Wood, Woolwich. In 1908 three London schools were opened, whilst in the provinces similar schools were opened at Norwich, Halifax, and Bradford.

The subject of the present article is the seventh of these schools, which was established in Whiteley Wood, Sheffield, during June, 1909.

The School Buildings and Site.

A small Elementary School existed at Whiteley Wood. This had been discontinued owing to the small and decreasing number of children in attendance. Certain alterations and improvements to the premises were effected, and the school thus made ready for the accommodation of fifty debilitated children.

The situation of the school (with the exception of its distance from the tram terminus) was almost ideal. It was surrounded by wooded meadow-land, close to the Derbyshire Moors, and about five miles distant from the centre of Sheffield.

The structural alterations consisted in the conversion of one classroom into a kitchen by the provision of a kitchen range, a copper, hot-water drum, sink, etc., whilst another classroom, divided in two

parts by a wooden partition, was converted into a medical inspection room and a bathroom, the latter being provided with four rose-showers supplied with hot and cold water.

Two sheds were available. The one which faced south was used throughout as a dining-shed, all meals being served here whatever the weather might be. The shed facing north was only used in wet weather for class-work and during the two hours' rest.

The school was visited weekly by one of the school nurses. At these visits the nurse assisted in weighing the children, examined them as to cleanliness, etc., and afterwards paid home visits when necessary.

REST-TIME.

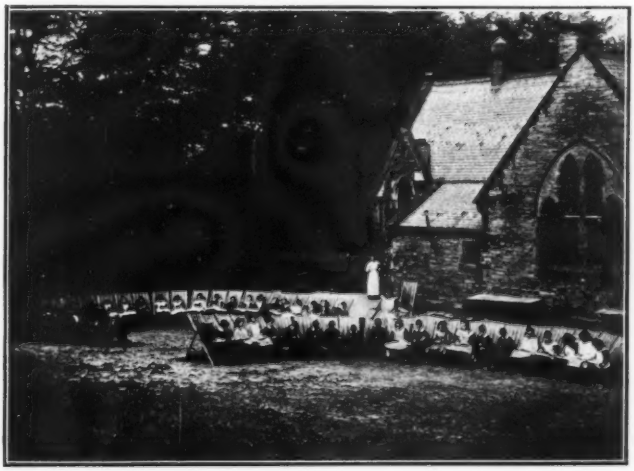
All the homes of the children were visited during the earlier days of the school in order to impress on the parents the necessity of sending the children to bed early, keeping their bedroom windows open, and allowing them to go to sleep in the afternoons of Saturday and Sunday if possible.

Selection of the Children.

No difficulty will be found in any of our great industrial centres in selecting children for this type of special school.

The following is a list of the physical defects from which the children were suffering on admission. It also shows the number of children in which such defects occurred :

Morbid Affection.	No. of Cases.
Anæmia and malnutrition	43
Oral sepsis	13
Tuberculosis of lung	3
Doubtful tuberculosis of lung ...	9
Tuberculous glands	2
Convalescing from pneumonia ...	1
Convalescing from kidney disease ...	1
Debility after operations for removal of tonsils and adenoids	4



CLASS WORK.

The children met in the morning at the Central Tram Terminus, from which they were conveyed, by special car and then waggonette, to the school. They arrived at 9.20 a.m. and remained until 5.45 p.m., when they walked down to the tram terminus for the homeward journey.

The Curriculum of the School.

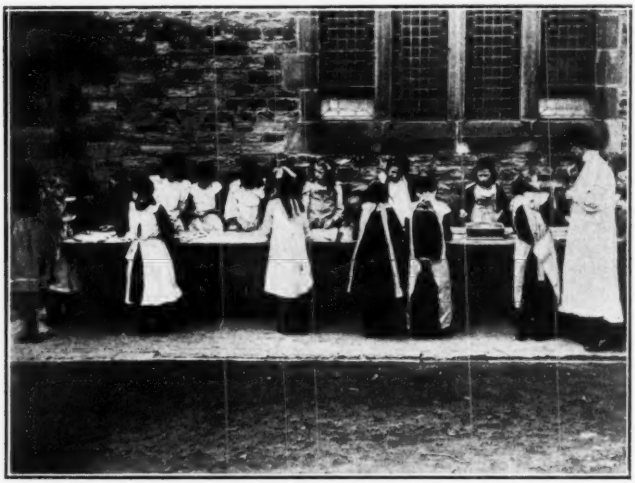
The intellectual work was cut down to the minimum of $3\frac{3}{4}$ hours daily, whilst extended time was given to gardening, housewifery, Nature study, and personal hygiene. The latter was a prominent feature, and habits of cleanliness were impressed upon the children by the regular daily cleansing of the teeth, the washing of hands before all meals, together with the use of the brush and comb.

The Feeding of the Children.

Three good meals were provided daily, and all were served in the open-air shed. On arrival at 9.20 a.m., breakfast, consisting of porridge and milk, was served; dinner was partaken of at 1 p.m., and tea at 5 p.m. No intermediate meals were given, as it was not thought advisable to put too great a strain on the digestion of the children, many of whom had previously been underfed.

The cost of feeding worked out at slightly less than 2s. 6d. per head per week (three meals daily for five days).

The parents contributed to the cost of the food, their contributions varying from 2s. 6d. to 6d. per week.



HOUSEWIFERY.

The Regulation of Rest.

All the children rested, in the deck-chairs provided, for a period of two hours after the mid-day meal. The chairs were placed in the playground, each child being wrapped in a blanket. The bad weather necessitated the sheds being used on many occasions during the hours of rest, and several times the weather was so severe that the children had to be brought into the schoolroom. This, however, was very efficiently ventilated.

Shower-Baths.

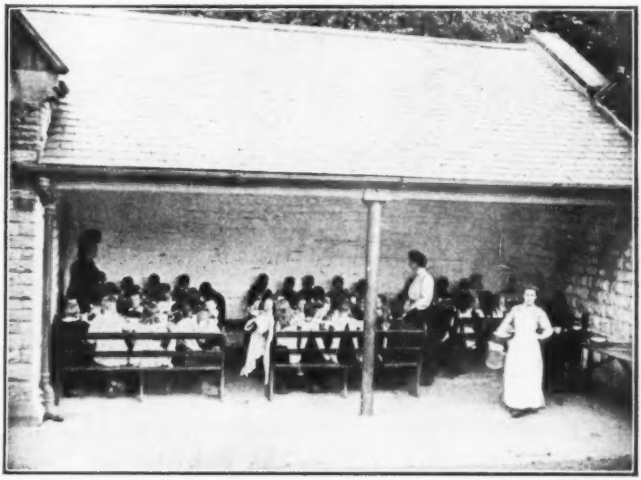
Each child had two warm baths weekly. These acted not only as a cleansing agency, but also were most beneficial to the health of the children.

Economic Considerations.

The total cost of the school (which was open five days every week from June 21st to October 29th) was £366. From this must be deducted £70 in Government Grant and £18 in parents' contributions.

Results.

After taking into consideration the weather, which, with the exception of a fortnight in August, was wet, cold and stormy, the results were very satisfactory. Of the 40 children who attended throughout, there were cured 17; improved 32; same condition 1.



MEAL-TIME.

The results might be classified as follows:

Increase of Weight.—The children were weighed by me every fortnight, and it was found that the average gain during the four months was 2·7 kilos (5·9 lbs.). During the same period it was calculated that children of the same age attending the ordinary schools put on 1·1 kilos (2·4 lbs.). Certain children increased in weight considerably, one putting on 5·1 kilos and another 5·75 kilos.

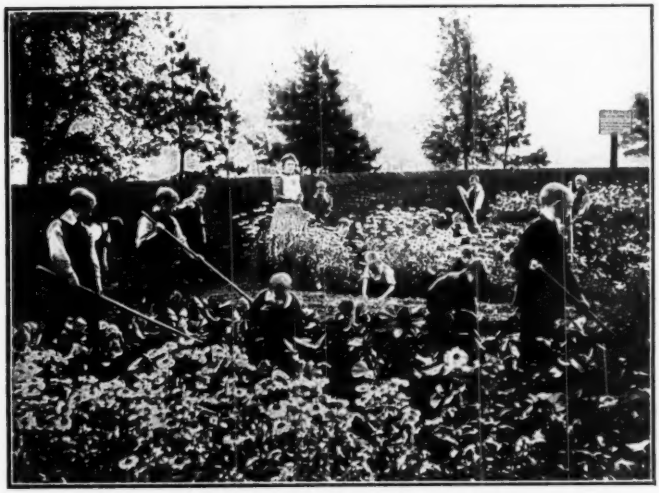
Increase of Chest Measurements.—It was found that marked increase had taken place in chest girth at full inspiration in 35 of the children. In 8 the increase was over 1½ inches.

General Appearance and Character.—Most of the children on admission were dull and listless. In the course of a few weeks they became

bright and lively, and their conduct, both during lessons and at meal times, improved in a most striking manner. They became willing, obedient, and anxious to work for the good of the community.

Conclusions.

Of the permanency of the results obtained it is difficult at present to speak, although in Germany, where most experience has been



GARDENING.

gained, a considerable portion of the children treated have remained permanently cured.

There is no doubt, however, that undertaken on a large scale, the Open-Air Recovery Schools will be of the greatest value in the treatment of anæmia, malnutrition, tuberculosis, and such-like conditions, and will thus tend to increase the physical efficiency of the race.

TUBERCULOSIS IN SYRIA.

By MURIEL I. CANDLER.

In Syria tuberculosis is comparatively a new disease. It was introduced, or reintroduced—since we know the Romans suffered from it—by the French soldier-police sent to keep order on the Lebanon after the terrible massacres of 1860. During the last two decades there has been a steadily increasing emigration of young men from Syria to America in search of the "almighty dollar." Some 60 per cent. of the males now go to the United States, and there, in the stuffy tenement rooms of crowded cities, and in a climate far more severe than they are accustomed to, they try to live on the frugal fare which amply suffices in their own pure mountain air, overworking in the daytime, and sedulously shutting out all "draughts" at night. It is not surprising that many a wanderer returns home to his native land to die of tuberculosis, and in only too many instances bequeaths a legacy of tuberculosis to his household and village associates.

The Syrians are peculiarly susceptible to tuberculous infection, and peculiarly senseless in avoiding it; consequently the great white plague has spread rapidly, and not unnaturally has produced an inordinate dread of it, particularly among the Christians, who do not share the fatalism of Mohammedans and Druses. It is no uncommon thing to keep a patient in a stable or out-house. In some instances the tuberculous sufferer is locked in, or even built in, for safety, the daily rations being passed in through a small window. For a landlord to turn a tenant out of his house because he coughs, or is growing thinner, is becoming an every-day occurrence.

Until recently there was no sort of home where consumptive cases could be received. The general hospitals, with which Syria is well supplied by different medical missions, found it impossible to admit tuberculous patients.

For years the cry has been "Something must be done"; but the credit of making the first attempt belongs to Dr. Mary Eddy, an American lady, whose warm sympathy and indomitable energy, combined with a thorough knowledge of the people and their customs, have surmounted the greatest difficulties and manifold prejudices, and brought into being what others have talked and dreamed of for years. Dr. Eddy bought and adapted a house, originally built for a school, standing on a miniature plateau of the Lebanon, some 4,000 feet above sea-level. The place is sheltered from winds by a high ridge, forming a sort of amphitheatre. It faces towards the west a wide gorge, which runs between various mountain ridges to the

Mediterranean, thus gaining the full benefit of the refreshing west winds and of a beautiful view extending to the sea. This beautiful outlook Lamartine has immortalized in more than one of his poems. The sanatorium is more than half a mile from the nearest village, and has a natural well and two springs. Nature seems to have designed the place for its present purpose.

The building is a two-storeyed one, of which the ground-floor is reserved entirely for the staff; the upper and airier floor is allotted to the patients. They are, however, kept out of doors all day in open tents, consisting of a framework covered with native reed matting. Some also sleep out, and here a new difficulty arises, as they have occasionally been visited by a stray hungry wolf, so the should-be open sides have to be covered with wire-netting; this gives a rather Zoological Gardens appearance to the place. The upper storey contains single and double rooms, and two "wards" of four beds each, in which patients are graduated according to their means or wishes, the full-pay patients having a separate table in the dining-hall, with European dishes in addition to the standard native food.

The climate is nearly perfect for an open-air life. For at least four clear months there is no rain, but the nights are fresh and cool, with sometimes heavy dews. Yet in this apparently perfect climate the natives are singularly susceptible to chill. They have none of the hardihood of our Northern races, with skins braced up by our erratic climate to meet its own exigencies. Thus, in introducing an open-air life, one has to be far more cautious than at home in regard to the effects of change in temperature.

In the summer of 1908 Dr. Eddy opened her sanatorium, and received some half-dozen patients. This past summer I have had the pleasure of helping her. Our patients numbered twenty. This sounds a paltry number in a country where the need is so great, but one must take into account that we want only early cases, and as a rule the dreaded disease is not acknowledged until it is too obvious to be denied. Indeed, the local doctors rarely dare tell their patients the truth for fear of desperate consequences. Patients commonly manifest an unconquerable dread of mixing with worse cases. But once patients were installed in our sanatorium, they usually showed an intelligent interest, and readily acquiesced in the precautions taken for their and others' safety. If we could have taken hopeless cases, we should have filled our beds a dozen times over. But the depressing effect on the curable patients is so harmful that it is out of the question. A temperature of 103° or so, due to sheer fright or worry, is by no means uncommon; and we had one case in which such a temperature remained at about 103° for a week, with consequent loss of weight.

After we had begun to admit patients we could not get workmen to come into the sanatorium. Even when working on an out-house, some hundred yards from the sanatorium, one of the labourers, on hearing a distant cough, straightway bolted, and that without "his hire."

We sometimes kept advanced cases a week or two for educational purposes, but the difficulty of finding a driver to take them away again was an added drawback, which experience teaches is a very serious one. On one occasion we had a consumptive woman from our nearest large village, and, being so well known, not a driver would take her home again. Two came, not knowing who their fare was to be, and, on seeing her, refused. Finally, our man commandeered a mule from another village, and, seated with her bed on this, her father took her home, while the owner stayed with us, hoping that, without him, his mule would not be recognized and so lose him custom.

This unreasonable dread of tuberculosis is even greater after death, and on one occasion we had to dig a grave on the sanatorium land, and, with the help of the patient's two brothers, Mohammedans, and those of our staff who were not too terrified, to play the parts of undertaker, bearers, and priest, and this more or less by stealth, that the other patients might not see the pathetic little funeral.

Such incidents will indicate how different is the work from the plain sailing in a civilized country. The Government does nothing. Notification has been tried in certain districts, but proved an utter failure. In many instances native doctors are too afraid of contamination to do more than send their patients "to the mountains," and so conveniently get rid of them.

"Mais c'est le premier pas qui coûte," and already this year Dr. Eddy notices some slight lessening of the absurd terror as compared with last summer, and each year that one can live among these poor Syrian consumptives and survive, and send home arrested cases, will tell immensely. A crusade on American lines is being started, with illustrated posters that cannot fail to attract attention. Lectures are to be given at different centres.

The Syrian Committee which has been planning a sanatorium for some years has at last sufficient funds to begin to build. Its vice-president, Dr. Bshara Manasseh, has given the land and much of his time to the enterprise. It is hoped that the sanatorium will be ready to receive patients next spring.

Possibly in a few years the overworked party of Union and Progress may find time to attend to a matter of such vital importance as the national health, and give some support to the Anti-Tuberculosis Movement, which at present is entirely dependent on private support.

A VERANDA BEDROOM FOR CONSUMPTIVES.

By BERTRAM SMITH.

In the City of the Future—where there will be no place for tuberculosis; no room for "frowst" or mustiness, dirt or darkness; where every house will admit the air, and every room invite the sunshine—it is safe to predict that the veranda bedroom will have become a commonplace. For, however much our daily avocations may conspire to keep us indoors, to spend the night in the open is a boon both obvious and easy of attainment. Except under abnormal weather conditions there would seem to be little justification for sleeping indoors at all, save that of custom and convenience. Even as the night-caps and close curtains of our forefathers have had to go, it may well be that walls and windows will be found unnecessary in the time to come; and the "open-air cure" is already doing much to bring home to many besides consumptives, not only the benefit from a health point of view, but also the sheer refreshing and invigorating pleasure of nights spent beneath the stars. But we are ever loth to take a little trouble, and we have hardly yet arrived at the point where sleeping-out becomes handy and convenient. It is the triumph of the veranda bedroom that it makes sleeping-out quite as easy as sleeping-in. That excellent institution, which at present does duty in this connection—a shed, with three sides, at the foot of the garden—would be vastly more popular than it is did it not entail the necessity of turning out into the inhospitable night. With a veranda that opens off one's bedroom, on the other hand, it is only necessary to take a few steps, throw off one's dressing-gown, and get into bed.

It is a question admittedly that must be considered when the house is built, and it is possible that we shall see no great development of the movement until we have a leading architect who is himself afflicted with tuberculosis, and has gained wisdom through experience; but, in the meantime, some few particulars of my own veranda may be of interest.[1]

The first consideration is, of course, to deal with driven rain. In order to avoid the morning sun the veranda is best situated occupying the south-west corner of the house, and—in my neighbourhood at least—it is from the south-west that the great bulk of the rain comes, often penetrating 4 or 5 feet across the veranda floor. There is no doubt that by far the best way to get over this difficulty is to have the veranda of such width that the rain may be freely admitted with-

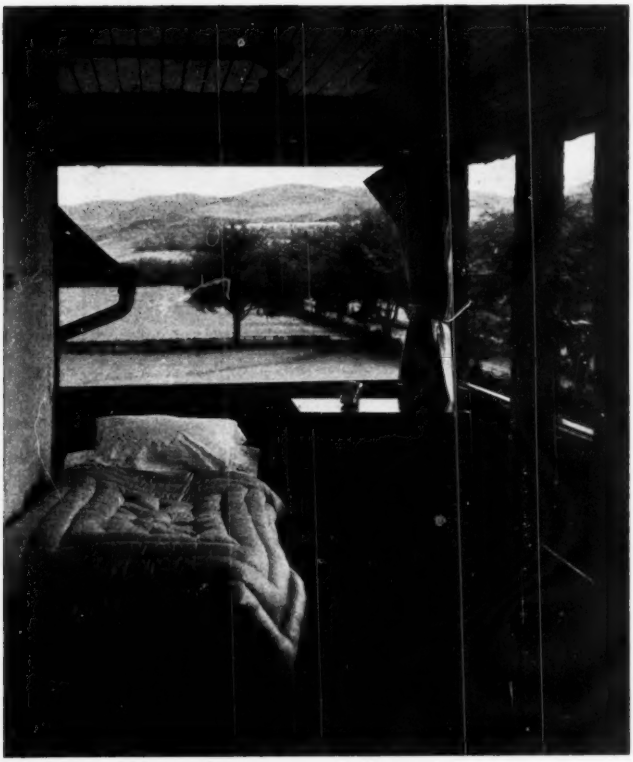
[1] We are indebted to the courtesy and kindness of Mr. Bertram Smith and the Editor of *Country Life* (London: 20, Tavistock Street, Strand, W.C.) for the loan of the blocks from which the accompanying illustrations have been prepared.—Editor, *B. J. T.*

out reaching the bed. Mine does not aspire to this, but I have found a canvas screen running upon rods at top and bottom a satisfactory contrivance. A close rail, about 30 inches high, is quite sufficient to conceal the bed from view. And here I would like to emphasize the enormous advantages of having your veranda on the second floor. This not only insures a perfect privacy, and lifts one above the range of the casual tramp or prowling cat: it adds greatly to the charm

THE VERANDA OPENING OFF THE BEDROOM.

and interest of both nights and mornings by reason of the extended view. For one has only to sit up in bed to see the moon roll over the shoulder of the hill, or watch the widespread crescendo of the dawn—and that is a joy that may be regarded as the peculiar gift of sleeping-out. For the rest, my veranda has electric light—a point of great importance where wind is always stirring—and an asphalt floor slightly sloped to take the water off. Of drawbacks there is little to be said. I have slept on my veranda this winter in 20 degrees of

frost with both comfort and profit. I slept on it last summer in the heats of August with infinite enjoyment; and I am convinced that there are not a dozen nights in the year when one need be driven to evacuate the position. There is a type of small, penetrating snow which has wonderful powers of sifting through cracks and crannies when the wind is high that is almost impossible to exclude. In the face



THE EXTENDED VIEW FROM THE VERANDA BEDROOM.

of this visitation, it is better to own oneself defeated, dismantle the bed, and seek refuge within. And one has to face a far different disability occasionally on warm summer nights in the cloud of midges that beset one's couch; but the midge's activity dies away as soon as the light goes out, and he is seldom in evidence after midnight. Is it not worth much thus, without inconvenience, to spend a third part of one's whole life in the open air?

CRITICAL REVIEWS.

TESTS FOR TUBERCULOSIS.

By EDWARD L. HUNT,

M.R.C.S., L.R.C.P., D.P.H. CAMB.,

Assistant in the Bacteriological Laboratory, St. George's Hospital, London, and Clinical Pathologist to the Mount Vernon Hospital for Consumption and Diseases of the Chest; late Government Inspector of Inoculation with Haffkine's Plague Prophylactic.

THE recognition of tuberculosis by the clinician has been greatly aided in recent years by methods based on bacteriological investigation. Some of these bacteriological tests, such as the ophthalmo- and cuti- reactions of Calmette and von Pirquet, and the tuberculin tests, in which variations of temperature are chiefly relied on for diagnosis, still remain in the hands of the physician; but others, which we chiefly propose to consider here, require the aid of the skilled pathologist. These bacteriological methods fall into two groups: (1) Those in which the discovery of the bacillus is the end sought, and (2) those in which changes in the fluids of the body, consequent on the introduction of the tubercle bacillus or its products, are determined.

The Collection of Sputum, Pus, and Other Secretions.

The discovery of the tubercle bacillus in sputum, pus, and urine, still remains the most important and reliable evidence of tuberculosis. Of the sputum it is unnecessary to speak, except to emphasize the necessity for greater care in collection and selection of the samples, if the best results are to be obtained. The difficulty of contamination with secondary organisms, encountered when it is desired to make a culture of the tubercle bacillus directly from a patient's sputum, has been avoided by Twort,[1] who uses the glucoside Ericolin in a 2 per cent. solution in distilled water for the purpose of getting rid of contaminating organisms present in the sputum. He places the piece of sputum in the solution for about an hour at 38° C., and thereafter inoculates suitable media, and so obtains a growth almost or quite free from contaminations in from fourteen to twenty-eight days. Pus often gives negative results, but occasionally gives valuable aid in a difficult diagnosis. In urine the bacillus is found by staining methods in some 20 per cent. of cases of suspected tuberculosis of the urinary

[1] Twort: Royal Society, March 4, 1909.

tract, according to the experience of the clinical laboratory of St. George's Hospital. Russ[1] has demonstrated an electrical method for separating tubercle bacilli from the urine. The method is of use for either living or dead bacilli. Under the influence of a suitable current, the organisms collect at one of two electrodes, and this forms a means of collection and examination. Where the centrifuge has failed to bring down the organisms, this electrical method has proved successful. In cerebro-spinal fluid the bacillus is occasionally found, and it was hoped that a method devised by Marmorek would have given much-needed aid in the diagnosis of tuberculous meningitis, but experience has shown its unreliability.

Tubercle Bacilli in Blood.

The publication by Rosenberger[2] of a method for the discovery of the bacillus in the blood, and the successful results which he obtained even in cases of incipient phthisis, seemed to have brought within easy reach a means by which a certain diagnosis could be arrived at in a quite early stage of the disease. Rosenberger was confirmed in his results by Forsyth ;[3] but Hewat and Sutherland,[4] following Rosenberger's methods, were unable to confirm his results. In a recent paper by Anderson,[5] this question of tubercle bacilli being present in the circulating blood of tuberculous subjects is carefully gone into, and the results of his experiments, which included the inoculation of guinea-pigs, prove that this method for the diagnosis of tubercle may be considered as practically useless ; for in no instance, in the case of human beings, was he able to detect tubercle bacilli in the circulating blood. Some experiments by the writer have yielded results similar to those of the last-mentioned author.

Coming now to methods falling under the second heading, in which changes in the fluids of the body, due to the introduction of the tubercle bacillus or its products, are investigated by bacteriological means, one may mention the determination of the agglutinating power of a tuberculous patient's serum, and the estimation of the opsonic index to the tubercle bacillus. The first of these does not appear to be of much value as a method for the diagnosis of tubercle, for in the hands of Beck and Rabinowitch it did not yield good results, while Koch concluded the method to be useless ; the latter used a solution of triturated bacilli, 1 part to 10,000 of diluent.

[1] Russ, C. : Royal Society, June 24, 1909.

[2] Rosenberger, Randle C. : "The Presence of Tubercle Bacilli in the Circulating Blood in Tuberculosis," *American Journal of Medical Sciences*, vol. cxxxvii., No. 2, p. 267, 1909, and *New York Medical Journal*, June 19, 1909.

[3] Forsyth, C. E. P. : *British Medical Journal*, vol. i., p. 1001, 1909.

[4] Hewat, A. M., and Sutherland, G. H. : *British Medical Journal*, vol. ii., p. 1119, 1909.

[5] Anderson, J. F. : "Public Health and Marine Hospital Service, U.S.A.," Hygienic Laboratory Bulletin No. 57, September, 1909.

Landis[1] considers the agglutination reaction to constitute an available means of estimating the degree of immunity attained in tuberculosis by means of tuberculin and other forms of treatment; he looks on it, however, as a useless means of diagnosis. The value of the second method—that of estimating the patient's opsonic index—depends on the stability of this index to tubercle bacilli in the healthy, and the instability in the tuberculous. In the latter the index may be found high or low, but it will be seen to fluctuate, and will be modified by slight causes, such as massage or exercise, or by the administration of tuberculin. Thus, as an aid to diagnosis, one may either make several observations of the index at intervals, when fluctuation of the index will point to tubercle, or make estimations before and after massage or exercise, or before and after the administration of tuberculin, in which cases fluctuation of the index will again be evident. As a help in diagnosing doubtful cases such estimations are considered by some of considerable value, but as a routine method of diagnosis this estimation is not practicable, on account of the time and expense incurred in carrying out the many steps necessary to complete an observation.

As to whether there is obtainable in cases of tuberculosis a reaction analogous to the one upon which is based the Wassermann serum-diagnosis for syphilis seems to be undecided. Laub and Novosny[2] show that deviation of the complement is not specific for tuberculous sera; while, on the other hand, Calmette[3] suggests, as a means of arriving at an early diagnosis of tuberculosis, that this test of deviation of the complement should be used.

TUBERCULOSIS IN CHILDHOOD.

By LEONARD FINDLAY,

M.D.,

Assistant to the Professor of the Practice of Medicine, Glasgow University; Dispensary Physician, Western Infirmary; and Extra-Dispensary Physician to the Royal Hospital for Sick Children, Glasgow.

It was formerly believed that tuberculosis, though not uncommon in childhood, was rare during infancy, but recent observations have shown that this is not the case.

The Prevalence and Incidence of Tuberculosis in Early Life.

No age is exempt; in fact, according to Finkelstein,[4] tuberculosis is more frequent during the first year of life than any other period of

[1] Landis: Proceedings of the Pathological Society of Philadelphia, 1907.
[2] Laub and Novosny: *Wien. Klin. Woch.*, t. xxii., 5 août, p. 1104, 1909.
[3] Calmette, A.: *British Medical Journal*, vol. ii., p. 528, 1909.
[4] Finkelstein: "Lehrbuch der Säuglingskrankheiten," p. 153, 1905.

childhood. His statistics referring to the infants under his care at the Charité Kinderklinik and Waisenhaus, Berlin, show a mortality from this cause of 72 in 5,600 cases—*i.e.*, 1·28 per cent. He also quotes the Prussian statistics, which exhibit a mortality rate from tuberculosis of 0·26 per cent. for the first year of life, 0·24 per cent. for the second year, and 0·13 per cent., 0·08 per cent., 0·05 per cent., and 0·07 per cent. for the third, fourth, fifth to tenth, and tenth to fifteenth years respectively. Baginsky[1] and Forsyth[2] both give even higher rates for the first year: the former 73 in 2,520 (2·8 per cent.), and the latter 128 in 1,202 (10·6 per cent.), children.

The published records of many recent workers, however, are at variance with the above figures, and show that the frequency of the disease increases with age. Holt[3] in 382 autopsies found evidence of tuberculosis in 160 cases (41·8 per cent.). In 10 the children were under three months, in 67 between three and six months, and in 83 between six and twelve months, of age. Hamburger's and Schluka's[4] post-mortem results reveal the presence of tuberculosis (active or latent) in 4 per cent. of infants dying during the first three months of life, in 18 per cent. between three and six months, and in 23 per cent. between six and twelve months—*i.e.*, 15 per cent. for the first year of life. These observers' corresponding figures for the second, third and fourth, fifth and sixth, eleventh to fourteenth, and above fourteen years, are 40 per cent., 60 per cent., 56 per cent., 65 per cent., and 70 per cent. Albrecht's[5] statistics, which refer to 3,213 autopsies on children, showed 33 per cent. to be suffering from some form of tuberculosis. Of these, 18 per cent. were under the age of one year, 65 per cent. between the ages of one and six years, and 17 per cent. between six and twelve years.

The Clinical Recognition of Tuberculosis.

The investigations of Pirquet,[6] Hamburger and Monti,[7] and Shaw and Laird,[8] who have approached this question from the clinical side, support the opinion that the frequency of tuberculosis increases with age. These observers have all used the cutaneous and subcutaneous tuberculin reactions as a means of diagnosis. All their records

[1] Baginsky: "Lehrbuch der Kinderheilkunde," p. 354. 1902.
[2] Forsyth: Proceedings of the Royal Society of Medicine, Children's Section, January 22, 1909. London: Longmans, Green and Co., 1909.
[3] Holt, L. Emmett: "The Diseases of Infancy and Childhood," p. 1071. London: Sidney Appleton, 1909.
[4] Hamburger and Schluka: *Jahrbuch für Kinderheilkunde*, No. 62.
[5] Albrecht: *Wien. klin. Woch.*, March 11, 1909.
[6] v. Pirquet: *Journal of Amer. Med. Assoc.*, vol. lii., 1909.
[7] Hamburger and Monti: "Die Tuberkulosehäufigkeit im Kindesalter," *Münch. med. Woch.*, No. 9, 1909.
[8] Shaw and Laird: "The Diagnosis of Tuberculosis," *Archives of Pediatrics*, July, 1909.

demonstrate a rapidly increasing percentage of positive reactions with the age of the children. Pirquet obtained a positive reaction in 5 per cent. of the cases during the first year of life, and all these presented clinical manifestations of the disease; during the second year he found that 25 per cent. reacted, with clinical manifestations in 20 per cent.; during the seventh year 52 per cent. reacted positively, and 20 per cent. presented clinical manifestations; and during the fourteenth year 92 per cent. reacted, while only 12 per cent. showed tuberculosis clinically. These figures prove most markedly that the frequency of infection of the child, as also its ability to combat the disease, as evidenced by the increasing percentage of latent tuberculosis, both increase with age. Hamburger's and Monti's figures are 9 per cent., 27 per cent., 51 per cent., 71 per cent., and 94 per cent. for the second, third and fourth, fifth and sixth, seventh to tenth, and eleventh to fourteenth years respectively. Shaw and Laird obtained positive cutaneous reactions in 2·5 per cent., 7 per cent., 14 per cent., 25 per cent., 30 per cent., and 45 per cent. of the children examined during the second, third, fourth, fifth, sixth, and over six years respectively. Hamburger quotes Ganghofer, of Prague, whose statistics are practically the same as his own. The variation in the actual figures of these several observers can be accounted for by their different methods of examination. Pirquet used the cutaneous method known after his name, and those cases which did not react on the first occasion were revaccinated one week later, and, if then positive, were included in his table of positive reactions. Hamburger used the subcutaneous method, or "Stichreaktion," a more delicate test than that of Pirquet; and Shaw used the cutaneous reaction, but only made one test with each child. All these tests depend on the presence of antituberculin in the system, and, as this substance in latent tuberculosis may disappear, but can easily be called forth again by a minute injection of tuberculin, it is thus evident that the higher figures of Pirquet and Hamburger are accounted for by their detecting cases of latent tuberculosis, which Shaw probably missed. The general uniformity, however, of these different observers' findings makes it probable that the various statistics give a fairly accurate idea of the incidence of tuberculosis in the class of child which they all examined; and, since the same high rate prevails in such widely-separated centres as Albany, U.S.A., Prague and Vienna, it is not improbable that in childhood the disease is as common in England also.

Nevertheless, while considering all these various statistics (compiled alike from post-mortem examinations and cutaneous tuberculin reactions), it must not be lost sight of that in nearly every instance the cases were drawn from the poorer classes. The post-mortem records

are from hospitals, and the cutaneous reactions were performed in Infant Asylums and Children's Hospitals. Consequently, one cannot say that the frequency of tuberculosis, as evidenced by these findings, gives one a correct idea of the incidence of the disease among the population generally. Truly, they show what a heavy toll the child of the poor man pays ; but that it is quite different in the case of the children of the better classes is borne out by Schlossmann's important though limited research. Schlossmann[1] examined 105 private patients by the Pirquet cutaneous method, and only obtained a positive reaction in four girls, aged one and a half, two, five, and six years. He also remarks that among the children of the better classes, brought to the dispensaries chiefly on account of the parent's fear that the children were tuberculous, positive reactions are seldom obtained.

Pirquet[2] in his work suggests that a uniform procedure of examination by the cutaneous method might be adopted internationally, and that children at different centres and of all classes of society might be tested. We entirely approve of this suggestion, which, if scrupulously carried out, would enable us to arrive at a fairly correct idea of the incidence of tuberculosis among the general juvenile population.

[1] Schlossmann : "Die Tuberkulose als Kinderkrankheit," *Münch. med. Woch.*, p. 398. 1909.
[2] v. Pirquet : *Journal of Amer. Med. Assoc.*, vol. lii., 1909.

PERSONAL OPINIONS.

THE ADMINISTRATION OF TUBERCULIN.

By ARTHUR LATHAM,
M.D., F.R.C.P.,
Physician to St. George's Hospital, and to the Mount Vernon Hospital for Consumption and Diseases of the Chest.

The first question to be answered is, "Does the administration of tuberculin lead to beneficial results in tuberculous disease?" To this question I would reply emphatically in the affirmative on the basis of a personal experience of what must, I suppose, now amount to 300-400 cases of tuberculosis in all its forms. No one could deny the value of tuberculin, sometimes the amazing value, who, like myself, has seen in his own practice cases like the following: (1) A patient suffering from acute tuberculosis, with fever to 104° F. and rigors, completely restored to health, and well two years afterwards. (2) A patient suffering from tuberculosis of the peritoneum, hip-joint, knee-joint, shoulder-joint, and pleura, with fever to 105° F., completely restored to health, and presenting no evidence of the disease two years afterwards. (3) A case of glandular tuberculosis and secondary infection, with a history of five previous operations, upon which the surgeon refused to operate again, apparently cured. (4) A waiter, with long-standing tuberculosis of the knee-joint of such a degree that amputation was strongly urged, given a movable joint of the same size as the healthy one, and enabled to resume his occupation. (5) Twelve consecutive cases of tuberculous peritonitis, in nearly all of which there had been previous attacks, and in many of which there had been an operation, lose all fluid and febrile disturbance. (6) A patient suffering from pulmonary tuberculosis, and kept in bed for six months without any effect on the evening temperature of 102° F., lose all fever, and enabled to get up after a few weeks of tuberculin treatment. (7) Patients suffering from pulmonary tuberculosis, associated with fever on exertion, in spite of one and a half to three years' ordinary treatment at sanatoria, enabled to take eight miles' walking exercise without an evening rise of temperature.

Many other examples might be brought forward if space allowed. Of course, tuberculin therapy has many failures to record, but what form of therapy has not? My own belief is that, given an early case

of any form of tuberculosis, and proper tuberculin treatment, the percentage of good results obtained will compare favourably with those obtained by any form of treatment in any disease. So far my personal experience is largely confined to the use of tuberculin T.R., and therefore I will not discuss the relative values of the different preparations on the market. Tuberculin therapy is not easy, for great harm results from injudicious dosage or spacing of the doses. I am content to be guided by a consideration of the temperature and clinical symptoms. The great point is not to be in a hurry. I commence with infinitesimal doses, increase them until they have a definite effect, and then proceed more cautiously still. I usually give the dose by the mouth on an empty stomach before breakfast, and I have proof of the efficacy of this method. Certainly it is the most convenient in hospital practice, in general practice, and in the case of children. In some cases, such as cases of lupus, I prefer to use the hypodermic method. On these points I have written at greater length elsewhere.[1]

SPITTING AND THE SPREAD OF TUBERCULOSIS.

By JOHN ROBERTSON,
M.D., B.SC.,
Medical Officer of Health for the City of Birmingham; formerly Professor of Public Health and Lecturer on Bacteriology in the University of Sheffield; Author of "Lighting and Ventilation in Regard to Phthisis."

Undoubtedly, spitting on public footpaths and elsewhere is an important factor in the spread of tuberculosis. The Corporation of the City of Birmingham has recently caused an investigation to be made as to the extent to which tuberculous sputum exists on the streets in the centre of the city. A labourer was instructed to collect from the pavements sputa which were yellow-coloured. These were submitted to ordinary microscopic examination, and 7 per cent. of them were found to contain living tubercle bacilli. Doubtless the percentage which contained tubercle bacilli was greater than was

[1] I would refer the reader to the following papers: "Preliminary Communication on the Administration of Tuberculin (T.R.) and other Vaccines by the Mouth, together with (*a*) Normal Saline Solution; (*b*) Fresh Horse Serum," Proceedings of the Royal Society of Medicine, April, 1908. "A Contribution to the Study of the Administration of Tuberculin in Pulmonary Tuberculosis," *Lancet*, October 31, 1908. "The Diagnosis and Treatment of Tuberculous Glands," *The Clinical Journal*, July 14, 1909.

actually found, as the microscopic method is obviously defective to a certain extent in cases where the sputum contains only few bacilli.

It has been pointed out that tuberculous sputum on footpaths is distributed widely by the feet of passers-by and by the dresses of ladies. A large proportion of women still wear garments which

SPUTUM SHOWING TUBERCLE BACILLI FROM A BIRMINGHAM STREET.

touch the ground. When the street mud is brushed off the dresses in bedrooms, etc., diffusion of the infection is likely to take place if present.

The Health Committee have taken into consideration the question as to whether notification, compulsory or voluntary, is likely to effectively stop this distribution of tuberculous sputum, and in this connection they have been impressed with the fact that, even before the cases are notified, the majority of consumptives have been actively distributing infection in their spit, so that any measures which they may devise for giving instructions to consumptives will not deal with

the large number of patients whose sputum is infectious before their cases are notified.

Apart altogether from the dirty, and in the majority of cases unnecessary, habit of spitting on public footpaths, it has been pointed out that a by-law which would limit spitting in general would have the desired effect of limiting the special spitting of consumptives in the pre-notification stage; and it has been suggested that, at all events in the first instance, so drastic a measure as the entire abolition of all spitting might be resisted by the general public, while one permitting spitting in the road channels and gullies would be sufficient as a step in the direction of the prevention of indiscriminate spitting. A large amount of information has been obtained from foreign countries as regards spitting on footpaths, and the administration of by-laws made to prevent it. In all cases where such a by-law has been in operation, distinct improvement in the condition of the streets has been noted.

TUBERCULOSIS AND THE PUBLIC HEALTH SERVICE.

By SIDNEY DAVIES,
M.A., M.D., D.P.H.,
Medical Officer of Health of the Metropolitan Borough of Woolwich.

There are four ways in which local health authorities and the State may aid in the war against tuberculosis:

1. *Regulation of Environment.*—General sanitary measures have already largely aided in the reduction of this disease. Drier houses, more cubic space in and about houses, windows which open, are strengthening the resistance of the individual to the attack of tubercle bacilli, though perhaps, as Sir Clifford Allbutt maintains, the cheapness of food during the past fifty years has been a more important factor. We must persevere in both these directions.

2. *The Prevention of Infection.*—On many points we disagree as to the common sources of infection, but it is well to specially guard against the danger insisted on by Professor Koch and Dr. Newsholme—viz., the infectiousness of advanced cases in poor homes. No pains should be spared to secure isolation of such, and removal to Poor Law infirmaries if necessary.

3. *Provision for Treatment.*—But next to improved environment and cheap food, sanatorium treatment perhaps promises more than most measures for fighting consumption. Woolwich has for five years main-

tained municipal beds for open-air treatment, and during that time the phthisis death-rate has fallen much more quickly in Woolwich than in the neighbouring Boroughs, where no such provision is made. For a small expenditure the majority of the patients sent are restored to the status of wage-earners for a longer or shorter period; thus the expenditure is economical. The returned patients are missionaries of open-air treatment; the scheme is educational. Many appear to be completely cured.

4. *The Control of the Public-house.*—Next to poverty, intemperance and the public-house are the chief allies of tuberculosis. All legislation which reduces the number of public-houses and lessens drinking will be an active factor in the abolition of this scourge.

INSTITUTIONS FOR THE TUBERCULOUS.

THE KELLING SANATORIUM.

THE Kelling Open-Air Sanatorium in East Anglia is for those who cannot afford the high fees of private sanatoria. It is situated about a mile from Holt, in Norfolk, and has accommodation for fifty-four patients—thirty-six men and eighteen women. Established in 1903, it is supported by private donations and subscriptions; but patients and their friends contribute what they can towards the cost of their maintenance, which amounts to 30s. a week. The admission sub-committee make full inquiries, and then decide what the patients and their friends must pay, and what grant, if any, should be given to each case from the special funds at their disposal. In this way pauperization of the patient is avoided.

As far as possible only early cases are admitted, and to insure this the admission sub-committee require a medical certificate signed by the patient's medical attendant, and countersigned also by their own medical referee.

The average stay of the patients is about twelve and a half weeks, and the results of the suitable cases show 69·7 per cent. restored and able to earn their living five years after their discharge.

A special feature of the sanatorium is the after-care which is directed by a special committee. Each patient is counselled as to what would be the best employment for him in the future. Experience has taught that it is much easier, if the medical condition allows, that the patients should take up their old employments again, or work on similar lines, as they can do so more effectively and with less strain than if they attempt anything new. If, however, they cannot resume their old occupations, the special after-care committee makes every effort to start them on a new career. A certain number of patients (nine men and two women) are kept on, after the ordinary course of treatment is finished, as "working patients." They give their work, and get their board and lodging and medical attendance in return. These selected cases are thus given the great advantage of a further course of treatment, and time and opportunity of getting back into regular work, and of looking out for some suitable job in the future. These "working patients" do all manner of work in and around the institution, their previous experience being taken as much as possible into consideration. The sanatorium is under the control of an executive committee and under the immediate management of a house committee, of which the resident medical officer, Dr. W. J. F. Fanning, is a member. Under the committee, the resident medical officer has full control, but there never has been a time at Kelling when the various officials failed to work harmoniously together. There is an overseer, who looks after the outside welfare of the institution, and

KELLING SANATORIUM.

finds work, under the doctor's direction, for the patients. The nursing staff is represented by a matron, house sister, two charge nurses, an assistant nurse, and a probationer; and the domestic staff by a cook, kitchenmaid, and seven others. A large flower industry has been started, and in this some of the patients find employment; others assist with the fowls and minor farming occupations. All have to do work as ordered by the doctor. In the shelters several of them make mats, and a few do wood-carving at times.

Contributions towards the support of this institution or applications for admission should be sent to the Secretary, Kelling Sanatorium, Holt, Norfolk.

H. W. McConnel, M.D.,
Hon. Secretary.

VALE OF CLWYD SANATORIUM, RUTHIN, NORTH WALES.

This sanatorium was opened in 1901 for the treatment of tuberculosis on the system carried out by Dr. Otto Walther at Nordrach, in the Black Forest, where the physician himself was a patient.

VALE OF CLWYD SANATORIUM.

A view of the sanatorium and hills from the south-west.

The sanatorium is situated in the beautiful "Garden of Wales," on the western side of the Clwydian range of hills, at a height of 450 feet above the sea-level, and so is well protected on the north

and east sides by the hills, which rise to over 1,800 feet. It is surrounded by parkland, and possesses an extensive range of walks on these hills.

The sanatorium is conducted on precisely similar lines to Dr. Walther's famous sanatorium at Nordrach, as in both institutions the carefully graduated hill-climbing walks form the most marked feature of the treatment, and correspond exactly. Treatment is supplemented in suitable cases by the use of tuberculin. The lighting is by electricity, and there are hot-water radiators in each room.

The sanatorium is two and a half miles from Ruthin, which is on the London and North-Western Railway, and can be reached in five hours from London, and in three hours from Liverpool and Manchester.

Terms are four and five guineas weekly, according to room.

GEORGE A. CRACE-CALVERT, M.B.,
Resident Physician.

HEALTH STATIONS.

COLWYN BAY.

COLWYN BAY is an entirely modern town, admirably situated on the north-west coast of Wales. The main portion of the town is at an elevation of 50 to 120 feet above sea-level, and behind this the land rises rapidly to a height of 200 feet. In winter the mean temperature and mean range of temperature are about the same as at Bournemouth and Torquay, and in summer the mean temperature is lower. The large

GENERAL VIEW OF COLWYN BAY.

amount of sunshine, the moderate number of rainy days, the rapid drying of the streets and ground after rain, the immunity from violent gales, the clearness of the atmosphere, and the complete absence of fogs, are climatic features of great value to invalids and other visitors.

There is a perfect water-supply, the purity and quality of which are absolutely ideal. The death-rate of Colwyn Bay has been consistently low. In 1909 it was 10·0 per 1,000 of the total population, the rate amongst residents being 7·8 per 1,000, which is the lowest yet recorded in the district, and the death-rate from infectious diseases 0·62 per 1,000.

Colwyn Bay is an admirable place for winter residence, especially for delicate people and people with weak chests and bronchial affections.

W. M. VENABLES-WILLIAMS,
Medical Officer of Health.

NOTICES OF BOOKS.

THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS.

THE best witness to the excellence of Drs. Bandelier and Roepke's treatise lies in the fact that no less than four editions have appeared within the short space of two and a half years, and that it has already been translated into seven different languages.[1] To the second edition there was added a description of the cutaneous and conjunctival tuberculin reactions, and to this many other valuable additions have been made, so that the volume has grown from 111 pages in the first edition to 239 pages in the fourth. At the same time the book maintains its character as a practical treatise, and we trust that the authors will exhibit in the future the self-restraint they have exercised up to now in avoiding redundancy and keeping the size of the work within reasonable limits. The new edition of the book contains a preface, written for the third edition, by Professor R. Koch, and its first half deals with the diagnostic use of tuberculin—cutaneous and percutaneous, conjunctival and subcutaneous. Of these methods, preference is given, with good reason, to the last, though the authors by no means neglect a careful description of the newer varieties, and the value of von Pirquet's reaction in infancy is fully admitted. In dealing with the subcutaneous use of old tuberculin for diagnosis, the small repeated doses, beloved of the French, and first introduced by Löwenstein and Kauffmann at the International Tuberculosis Congress in Paris, are condemned as insufficient. The authors find that many cases, subsequently proving tuberculous, are missed by this method, and they highly commend the larger dosage, rising from $\frac{2}{10}$ milligramme to 10 milligrammes. Special attention is paid to the diagnosis of tuberculosis in children, and the prognostic use of subcutaneous tuberculin, after the method of Engel, is given a place. The latter half of the work concerns itself with tuberculin in treatment, and we are pleased to find that the work of Wright and his followers has at last found a place. The English method is criticized from its weakest side—namely, the treatment of lung tuberculosis—and but little is said of its success in the treatment of localized tubercle. Moreover, no reference is made to the use of the opsonic index in diagnosis. Still scantier notice is taken in the book of the valuable work of American clinicians in the domain of tuberculin treatment. After a satisfactory description of the general principles and technique of tuberculin treatment as it is carried out at the present time, the authors pass to the consideration in fuller detail of the various preparations at present on the market. In dealing with the three preparations of Koch, the difficulty of nomenclature, caused by the discovery of late years that the new tuberculin contains but 2 milligrammes of solid substance per c.c., though made from and said to contain 10 milligrammes per c.c., is overcome by the

[1] "Lehrbuch der Spezifischen Diagnostik und Therapie der Tuberkulose." By Bandelier and Roepke. 4th Edition. Würzburg, 1910. Price, Mk. 6; bound, Mk. 7.

translation of all dosage into terms of c.c. This is puzzling at first, but it will probably prove in the end the best solution of the problem. Among the preparations of Koch, the authors have most praise for the "Bacillenemulsion," and in this the general consensus of opinion supports them. It has, in addition to its worth, the advantage of cheapness, which is no small matter where the massive doses of the German method are followed. At the conclusion of this excellent volume the authors lament the culpable neglect of tuberculin treatment by the bulk of the medical profession. They express a wish that their book may come into touch with a wider circle of workers, and we can sincerely echo this sentiment on behalf of the British community, among whom this valuable remedy is, in our opinion, too little used.

CLIVE RIVIERE, M.D.

SELF-HELP FOR CONSUMPTIVES.

Mr. Stanley Bates has written a most helpful manual for consumptives.[1] The writer has the best of all reasons for knowing what he is talking about, being himself a recovery case from "advanced" phthisis. As Sir James Crichton-Browne expresses it in his admirable preface, "There is, perhaps, no other malady in which, from first to last, the co-operation of the patient with his medical adviser is of more vital importance." At the best, recovery is slow, and often disheartening; and here is where Mr. Stanley Bates teaches us to ride triumphantly over the obstacles that lie in the path of post-sanatorium treatment in ordinary home surroundings. The joy of conquest being proportionate to the sum of difficulties overcome, the convalescent consumptive who carries out the suggestions laid down in this little volume will develop into a cheerful and purposeful being who realizes that the best things in life are still within his reach. Indeed, the practical details connected with life in an open-air hut are so fascinatingly described that one is reminded of Hewlett's hero in the "Open Country," and begins to regard such a post-sanatorium life as a never-ending picnic! The illustrations and photographs are excellent, and every necessary detail of cost, material, and construction, is given. Not only consumptives, but persons suffering from the modern vice of neurasthenia, would find healing in such a mode of life. The only practical point which has not been touched upon is the matter of ablutions. We are not told how and where these are to be performed. It is true that Mr. Hewlett's hero, John Senhouse, preferred dry sand to soap, but even he, one imagines, used water to wash himself with! Perhaps Mr. Bates will tell us about his bathing arrangements in his next edition.

EMILIA V. KANTHACK DE VOSS.

[1] "Open-Air at Home: Practical Experience of the Continuation of Sanatorium Treatment." By Stanley H. Bates. With Introduction by Sir James Crichton-Browne, M.D. Pp. 62. With illustrations. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. 1910. Price 2s. 6d. net.

THE HENRY PHIPPS TUBERCULOSIS INSTITUTE.

The last annual report of the Henry Phipps Institute[1] concerning tuberculosis patients attended in 1907-08 is full of interest. It contains a very complete statistical report, as well as pathological, clinical, and bacteriological papers. The following are the chief points of interest: Exposure to infection was traced in 60 per cent. of the cases. Alcohol and tobacco markedly increased the risks of the disease, and, as regards occupations, such as necessitated hard physical labour together with exposure to dust. Rickets is apparently unrelated to tuberculosis.

Pain, night-sweats, hæmoptysis, and dilated pupils, are regarded by the authors as chiefly dependent upon secondary infection, the pneumococcus being the chief cause of hæmoptysis. The organisms most frequently found were streptococci, *Bacterium coli*, and *Staphylococcus pyogenes aureus*. *Micrococcus tetragonus* was rare. Tubercle bacilli are not usually present in the fæces, unless sputum is swallowed or intestinal tuberculosis exists. Chronic phthisis is stated to be almost always associated with tonsillar tubercles, ulceration in and near the cæcum, and in the appendix. From a study of the opsonic test, it appears that bacillary emulsion can usually safely be reinjected after ten days. The percentage of phagocytes containing bacilli runs parallel with that of the contained bacilli. From a study of the bone marrow, it appears that the chief changes are cellular proliferation, mucoid or gelatinous degeneration, and fatty change. In about half the cases tubercles were found in the marrow containing tubercle bacilli.

F. R. WALTERS, M.D.

THE CARE OF INFANT LIFE.

Social workers will be interested in the first of a series of Health Manuals which "are intended to afford concise and up-to-date scientific presentation of the principles and practices which guide and govern the establishment and maintenance of personal, domestic, and national health, recently published under the general editorship of Dr. T. N. Kelynack.[2] It contains twelve chapters, which are the work of different authors, each an expert on the particular subject dealt with. This method of compiling books on scientific and social matters is rapidly growing in favour, and offers undoubted advantages, not the least being that the diversity of style prevents flagging of interest. The chapters deal with infancy in all its bearings. Practical matters, such as the hygiene, feeding, and common disorders of infancy, have chapters devoted to them, while the wider aspects of the subject, as, for instance, municipal action in the prevention of infantile mortality, the moral aspects of infant life protection, and the infant and the nation, are also discussed. Separate chapters deal with schools for mothers, day-nurseries, and milk depots.

[1] Fifth Annual Report of the Henry Phipps Institute for the Study, Treatment, and Prevention, of Tuberculosis. Edited by Joseph Walsh, A.M., M.D. Pp. 463. Philadelphia: The Henry Phipps Institute, 238, Pine Street, 1909.

[2] "Infancy." Vol. i. of National Health Manuals. Edited by T. N. Kelynack, M.D. Pp. vi+186. London: Robert Culley, 1910. Price, cloth limp, 1s. net; cloth boards, 1s. 6d. net.

Conciseness has throughout been aimed at, and we have here what amounts to an abstraction of essentials, which focuses the attention on vital points, while offering sound guidance for a more exhaustive study of any one special subject. The twelve appendices, consisting of excellent bibliographies illustrating the foregoing chapters, form a most valuable feature of the work, and should secure for it a warm commendation from social workers and all who are practically interested in the study of infancy. A novel and decidedly pleasing departure is to be noted in the page of quotations facing each chapter. They are drawn from a wide range of sources, and in many cases arrest the attention by their aptness and unexpectedness. Where so much is interesting, suggestive, and excellent, it would be out of place to single out any one chapter, were it not that a sad interest is attached to chapter ix., as it is probably one of the last literary labours of Dr. Stanley Atkinson. He crowded so much admirable and altruistic work into a comparatively short life that one cannot feel any doubt that, in the words of Huxley, "he has earned his wages." His chapter on "Law and Infant Life" is certainly one of the most valuable in the book, dealing as it does with a multitude of legal details affecting the infant, and written in the lucid and pithy style which characterized all that Dr. Atkinson wrote. Dr. Kelynack is to be congratulated on the production of this excellent little manual, and the appearance of its successors will be awaited with interest.

EMILIA V. KANTHACK DE VOSS.

ECONOMIC ASPECTS OF TUBERCULOSIS.

The power of the purse prevails even in matters pathological. The business side of consumption requires to be understood. Dr. A. Latham and Mr. C. H. Garland have performed a national service by the publication of their timely and exact study of the economics of tuberculosis.[1] They show the enormous waste in life and cost in money arising from the almost unrestricted ravages of tuberculosis. The book is throughout restrained and free from all the tricks of the mere alarmists. The authors seem to have striven to understate rather than exaggerate. Their argument is lucidly presented, and step by step the inevitable conclusion is arrived at that only by a wisely ordered scheme of State intervention can the present existing deplorable state of affairs be adequately met. In England and Wales, with its population of 32,000,000, 40,000 persons die annually from consumption. One death in every ten of the general population and one in every three in Poor Law infirmaries is due to this disease. The "death-rate" is, however, no true manifestation of the "damage-rate" of tuberculosis. At present our forces for combating the foe are quite inadequate. The registered Friendly Societies are spending £4,000,000 annually in the relief of sickness, of which over £1,000,000 is being paid on account of tuberculosis. "The number of beds in institutions at which sanatorium treatment is carried out without any charge to the patient is probably less than 500." The authors bravely condemn our ineffectual methods, but they boldly point the way to

[1] "The Conquest of Consumption." By Arthur Latham, M.D., and Charles H. Garland. Pp. 185. London: T. Fisher Unwin. 1910. Price 4s. 6d. net.

saner procedures. We lose annually in human lives what is equivalent to £2,300,000. Thirty per cent. of our population are living in such poverty that they cannot possibly provide for sick insurance. But there is a solution: "£65, necessary to provide six months' sanatorium treatment and the necessary provision for the patients' dependents, can be obtained by anyone who contracts consumption by a yearly contribution of 3s., provided that insurance for this purpose is made compulsory for every person aged fifteen and upwards. A contribution, then, of persons aged fifteen and upwards, of ¾d. per week, would provide six months' sanatorium treatment, and do much to restore the sufferer's wage-earning capacity, and would also provide for the maintenance of those dependent upon him." This book should be printed in a cheap form and be circulated among all ranks and conditions of our people throughout the land.

THE SCIENCE OF EXERCISE.

Professor Tait McKenzie has written what we venture to think will be recognized as a classic work regarding the rôle of exercise in health and disease.[1] The volume is "addressed to students and practitioners of physical training; to teachers of the youth; to students of medicine and to its practitioners, with the purpose to give a comprehensive view of the space exercise should hold in a complete scheme of education, and in the treatment of abnormal or diseased conditions." The author has attained his object with conspicuous success. Dr. McKenzie has brought many talents to his task. He is not only an experienced expert in all matters relating to physical culture, but he is an anatomist of distinction, a sculptor whose high rank is generally acknowledged, and a graceful and lucid writer, with a literary style which exactly fits his subject. Within the limits of a short review it is impossible to give any adequate idea of the wide scope and detailed value of the book; both medical adviser and layman will be fascinated by it, and no educationist should fail to procure it. The whole science and art of exercise is dealt with. The physiology of the subject is admirably presented. Various systems, including those of Germany, Sweden, and Japan are critically described, and methods applicable for schools, University life, physically, mentally and morally defectives, and subjects of varied pathological conditions. The place of exercise in the management of tuberculous cases is dealt with. Dr. McKenzie very rightly contends that "in cases where no lesion can be found, but where the tendency is shown by the history of exposure to infection, by family history, or by the formation of the chest, much good may be expected from open-air exercise, accompanied by training of the respiratory powers." The author and his work are widely known throughout America, and every educated man and woman in this country would do well to procure and study this notable work. The finely-executed illustrations add much to its value.

[1] "Exercise in Education and Medicine." By R. Tait McKenzie, B.A., M.D., Professor of Physical Education and Director of the Department, University of Pennsylvania, etc. Pp. 406. With 346 illustrations. Philadelphia and London: W. B. Saunders Company. 1909. Price 15s. net.

THE FEEDING OF THE INFANT.

Many of the ills which flesh is supposed to be heir to are really dependent on conditions of malnutrition in infancy. The human soil, even where the seed may not be early implanted, is rendered fruitful for tubercle and other diseases by neglect or mismanagement in life's beginnings. Dr. Ralph Vincent's work on nutritional problems of infancy now takes rank with our standard treatises.[1] The fact that in seven years this notable volume should have passed through three editions testifies that it is no ordinary book. The author is a pioneer, and has done much to reconstruct our methods of dealing with the feeding of infants. In the present edition, detailed descriptions, aided by admirable illustrations, are given of the procedures adopted at the Infants' Hospital for the collection, storage, preparation and prescribing of milk for the infant patients. Dr. Vincent's explanations of the science and art of substitute-feeding are so full, lucid, and accurate, that with this work at hand every practitioner should quickly understand the rationale of the measures advocated by the author. There is much in this volume which will confound ancient empirics, and we may hope will enlighten those who have been content to muddle along with rule-of-thumb procedures. There is much, also, which is almost revolutionary in its teaching, particularly that which deals with so-called zymotic enteritis. Dr. Vincent's researches have been long-continued and thorough, and his exposition strikes us as particularly logical and convincing, but he must let his contentions and conclusions pass through the fires of criticism. If the author's views are substantiated this book will stand out as one of the most important and valuable of modern times. It is a volume which every medical practitioner should possess, and we could wish it were possible that every thoughtful parent might procure and peruse it. The volume is appropriately dedicated to Professor Thomas Morgan Rotch, one of the Consulting Physicians to the Infants' Hospital, and Professor of the Diseases of Children in the Harvard University.

THE STOCKHOLM TUBERCULOSIS CONFERENCE.

Much credit and many congratulations are due to Professor Dr. Pannwitz for the prompt way in which he has issued the bulky but attractive volume in which the records of last summer's International Tuberculosis Conference appear.[2] The "Transactions" are printed in German, French, and English, and deal with such subjects as the care of tuberculous families, especially of the healthy children; specific means in the diagnosis and therapy of tuberculosis; and tuberculosis in schools. A valuable feature are the reports on the progress of the Anti-Tuberculosis Campaign in different countries. The volume is an armamentarium of up-to-date weapons. All concerned in its production are to be congratulated.

[1] "The Nutrition of the Infant." By Ralph Vincent, M.D., Senior Physician to the Infants' Hospital, Westminster. Pp. 342. With illustrations. Third edition London: Baillière, Tindall and Cox. 1901. Price 10s. 6d. net.

[2] Report of the Eighth International Tuberculosis Conference, Stockholm, July 8-10, 1909. Edited by Professor Dr. Pannwitz. Pp. 542. Berlin, Charlottenburg: Internationale Vereinigung gegen die Tuberkulose. 1910.

THE HOUSING PROBLEM.

All practical students of tuberculosis have inevitably to concern themselves with house construction and home hygiene. Two recently-issued volumes deserve mention here. Mr. G. Gordon Samson has prepared a manual full of suggestions for those proposing to build a homestead for themselves.[1] Helpful plans allow the amateur architect to understand at least the elements of planning, and the data given should assist in attaining the author's desire "to teach any man so much of the art of house-planning that he shall be able to draw plans more nearly fulfilling his own particular requirements, prejudices, and idiosyncrasies than those drawn for him by an architect would be likely to do."

Another volume likely to be of service is that prepared by Mr. J. S. Nettlefold.[2] It consists of a careful exposition of errors in housing and their causes, the principles of town-planning, and much legal information relating to the problem. The illustrations and plans add much to the value of the work. This book will be of real assistance to practical reformers.

MANUALS FOR MEDICAL PRACTITIONERS.

For use in sanatoria and hospitals of every class, as well as to meet the exigencies of private practice, a convenient and compact handbook, descriptive of the latest and most reliable methods of dealing with the ever-advancing procedure of minor surgery is essential. Probably the best is that for which Mr. Bilton Pollard is responsible, and which is now in its fourteenth edition, and, so far, beyond reviewers' praise or blame.[3] The work has been brought thoroughly up-to-date, and still retains its premier position as a ready help in time of need—succinct, reliable, definite, and well arranged. The numerous illustrations greatly assist and amplify the text.

The second of the excellent "Medico-Chirurgical Series," edited by Mr. James Cantlie, forms a valuable clinical and pathological study of gastro-intestinal diseases and lesions of the pancreas.[4] The combination of physician and surgeon in the production of such a volume presents many advantages. This is an excellent work for the busy practitioner, for briefly and dogmatically, but scientifically, the various indications are given for operative interference and other forms of treatment. Judged by this volume, the scope of the surgeon is rapidly extending. The section devoted to the disorders of the pancreas, although short, is well conceived. The volume will form a useful addition to the library of the general practitioner.

[1] "How to Plan a House: a Book for All about to Build." By George Gordon Sampson. Pp. 133. Illustrated. London: Crosby, Lockwood and Son. 1910.

[2] "Practical Housing." By J. S. Nettlefold. With a preface by the Right Hon. Alfred Lyttelton, K.C., M.P. Popular edition. Pp. 198. With illustrations and plans. London: T. Fisher Unwin. 1910. Price not given.

[3] "A Manual of Minor Surgery and Bandaging, for the Use of House Surgeons, Dressers, and Junior Practitioners." Fourteenth edition. Pp. 488, with 250 figures. London: J. and A. Churchill. 1909. Price 7s. 6d. net.

[4] "The Stomach, Intestines, and Pancreas." By W. C. Bosanquet, M.A., M.D., F.R.C.P., and H. S. Clogg, M.S., F.R.C.S. Edited by James Cantlie, M.A., M.B., C.M., F.R.C.S. Pp. 665. London: John Bale, Sons, and Samuelson, Ltd. 1909. Price 12s. 6d. net.

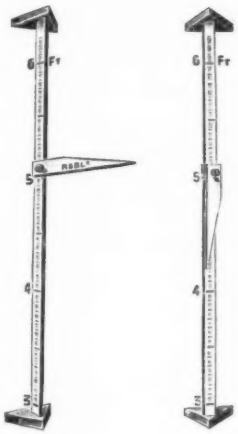
PREPARATIONS AND APPLIANCES.

ANTI-TUBERCULOSIS LANTERN SLIDES.

ALL rational means for the encouragement of scientifically designed educational work in connection with the compact against tuberculosis merits praise. We therefore commend to the notice of our readers an interesting scheme which owes its inception to the Jeyes' Sanitary Compounds Company.[1] By arrangement with the proprietors of the *Medical Officer*, this well-known firm has for some time past been supplying local authorities, free of charge, with copies of the consumption cartoon issued by this journal, with the permission of the New York State Department of Health, the owners of the copyright. Messrs. Jeyes have now gone a step farther, and have had prepared a number of excellent LANTERN SLIDES, reproducing the twenty-one illustrations which go to make up the cartoon. These slides they are now prepared to forward on loan to any lecturer in the United Kingdom ; and as they reproduce in a graphic fashion the main facts regarding the cause, prevention, and cure, of tuberculosis, medical officers of health and social workers generally will doubtless be glad to avail themselves of the excellent material thus so generously placed at their disposal. It is scarcely too much to say that, with the aid of these slides, any lecturer of ordinary capacity should have no difficulty in interesting and instructing an audience for at least an hour without notes or any other assistance. Over one hundred local authorities, public health associations, and other bodies, have already secured from Messrs. Jeyes supplies of the cartoon above referred to. The only return for this enterprise is an inconspicuous advertisement in the form of the word *Jeyes* printed in small type on the illustration of the vessel containing the disinfectant, a by no means excessive *quid pro quo* for the outlay involved. For our part, we welcome such efforts to assist the work of those engaged in the battle against consumption, and should be glad to see an extension of co-operation between the great trading organizations of this country and all workers in the interests of public health.

[1] A list of the Anti-Tuberculosis Lantern Slides with full particulars may be obtained on application to Jeyes' Sanitary Compounds Co., Ltd., 64, Cannon Street, London, E.C.

MEASURING STANDARDS.



Nowadays accurate weighing-machines and reliable MEASURING STANDARDS are not confined to doctors' consulting-rooms, but are necessary to the equipment of every hospital, sanatorium, and public school. A particularly convenient form of standard for the taking of height is indicated in the accompanying figures.[1] They are made of boxwood, and are graduated either according to English measurements or to the metric system. It will be seen at once that this standard has the advantage of having the index hinged, so that when not in use it can be turned downwards and retained in a vertical position, so avoiding the danger of being broken, as well as affording convenience for storage and transit.

A NOVEL STETHOSCOPE.

Dr. Haydn Brown has introduced an excellent form of BINAURAL STETHOSCOPE, the chief characters of which are shown in the accompanying figure.[2] It is simple in construction, light and portable, comfortable to use, easily adjusted, and is kept in position by a spring which passes across the posterior part of the head, thus getting rid of the cumbrous springs, clamps, and the like, which, when placed in front, are so apt to hinder or hamper the physician. After extensive trial we can most thoroughly recommend this new stethoscope. In hospital and sanatorium practice this instrument is of particular service. As will be seen at a glance, it can easily be carried without inconvenience around the neck, so allowing alternate use with one of the old-fashioned, but often specially reliable and helpful forms of single stethoscopes.

[1] Manufactured by Messrs. Reynolds and Branson, Ltd., 13, Briggate, Leeds. Price 8s. 6d. each.

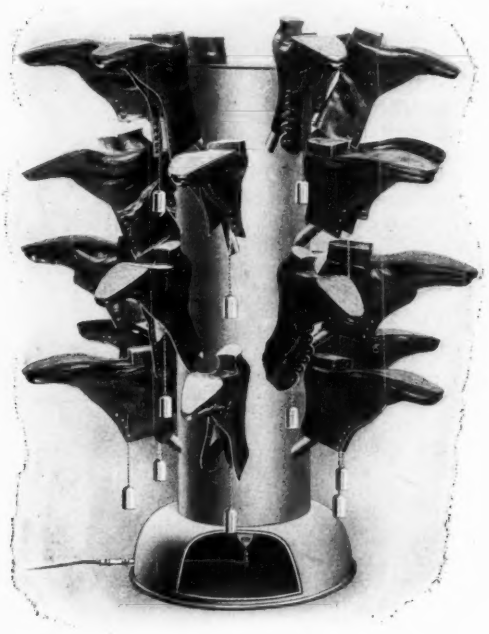
[2] Supplied by Messrs. Allen and Hanbury, Ltd., 48, Wigmore Street, Cavendish Square, London, W. Price 7s. 6d.

A POCKET SPUTUM FLASK.

The accompanying illustration[1] indicates the form and chief features of a new SPUTUM FLASK, which will be welcomed by many consumptives, for it has been designed to obviate the objection which not a few patients have to the use of a bottle-shaped receptacle. This flask is provided with small holes, which allow of its being lightly stitched to the inside of a handkerchief, and so used without attracting attention.

A HOT AIR BOOT-DRYER.

The unsophisticated and inexperienced are apt, in the enthusiasm of a theoretical advocacy of open-air methods, to overlook the diffi-



culties which are inseparable from it. The drawbacks, if such they may be called, are very real, and must be met in a sagacious and

[1] The flask is supplied by Messrs. Reynolds and Branson, Ltd., 13, Briggate, Leeds. Price 2s. each.

courageous manner. During winter months, undoubtedly, a very real perplexity arises from our climatic conditions. Arrangements must be made for the speedy drying of clothes and foot-wear. An ingenious and useful form of HOT AIR BOOT-DRYER[1] has recently been introduced, and is here illustrated, which will be of service not only in ordinary domestic service, but for use in schools, sanatoria, and similar institutions. The appliance provides for the slow drying of wet boots by the supply of a well-regulated current of hot air into the boots. By this means scorching and shrivelling of the leather is avoided, thorough drying is insured, the boots are given a longer life and kept in good condition, labour is lessened and a saving made in blacking and polishes.

A HYGIENIC DENTIFRICE.

A new dental preparation, KOLYNOS, has been brought to our notice.[2] The formula, which is that of Dr. N. S. Jenkins, has been submitted to us, and appears in every way admirable: soap and precipitated chalk are the principal ingredients, with various antiseptics. The preparation is put up in convenient collapsible tubes, and is not only particularly pleasant to use, but thoroughly effective in preserving the teeth and gums in good condition. Kolynos is the most elegant and attractive dentifrice with which we are acquainted.

[1] The Hot Air Boot-Dryer is manufactured by Messrs. Fisher and Ludlow, Ltd., Albion Works, Birmingham, at prices varying from £1 15s. to £4 4s.

[2] Supplied by Kolynos, Incorporated, 4, Farringdon Avenue, London, E.C., at 1s. a tube.

NOTES.

ANTI-TUBERCULOSIS POSTERS.

THE Man in the Street counts for much. He must be provided for. This our wideawake Transatlantic cousins have fully recognized.

CONSUMPTION CAN BE PREVENTED
WILL YOU JOIN THE FIGHT
The National Association for the Study and Prevention of Tuberculosis 105 East 22nd St. New York
The Printing of this Poster Donated By
Local Anti Tuberculosis Association's Address To be Placed Here
The Posting Donated By THE CITY BILLPOSTER

On February 1, 1910, the National Association for the Study and Prevention of Tuberculosis of the United States began to distribute the first of a million educational posters, which are to be pasted on the bill-boards in all parts of the country. The Associated Billposters of the United States have offered to give, free of charge, vacant space on all of the bill-boards of the country, and the Poster-Printers' Associa-

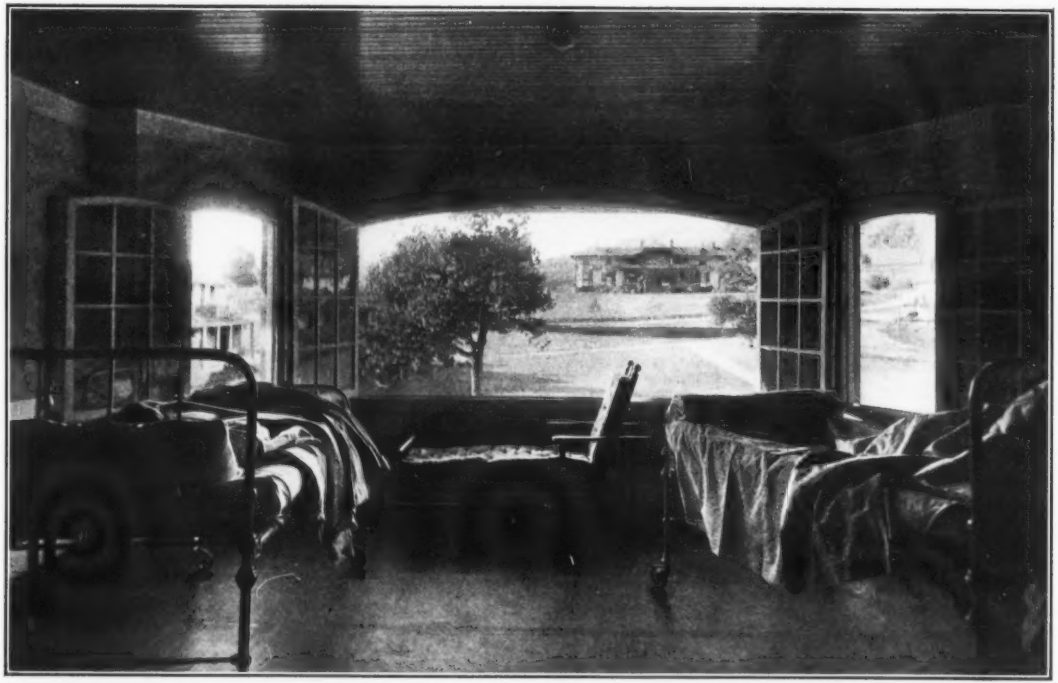
THE MARY LEWIS RECEPTION HOSPITAL OF THE LOOMIS SANATORIUM.

tion of America has donated the printing of these posters. Several hundred paper manufacturers have given paper for the posters, while artists have contributed sketches. The posters are being distributed through the local Anti-Tuberculosis Association and billposters in 3,400 cities and towns of the United States. The designs and reading matter display the salient facts concerning the prevention and treatment of tuberculosis, so that "he who runs may read." They are 7 feet wide and 9 feet 4 inches high, and will be printed in three colours. The number of posters that will be printed depends upon the amount of paper that is contributed. The first edition of 25,000 will soon be exhausted, and thousands more will be printed later.[1]

PROGRESS OF THE LOOMIS SANATORIUM.

In a former number of this Journal a description was given of the celebrated Loomis Sanatorium, at Loomis in Sullivan Co., New York. Dr. Herbert Maxon King, the physician-in-chief, has now favoured us with particulars of certain important extensions, and through his thoughtful kindness we are able to present illustrations of the same. "The Mary Lewis Reception Hospital of the Loomis Sanatorium is designed and equipped for the care of acute and advanced cases of tuberculosis, and for the reception of all new patients entering the sanatorium, for such period as may be required for preliminary examinations, observation, and treatment, preparatory to entering upon regular cottage life and routine. It has a capacity for twenty-eight patients—all private rooms, located on the first and second floors. Each room opens upon a veranda, of which there are fourteen, by a wide door permitting the wheeling in and out of the bed. On the third-floor are operating and dressing rooms, a fully equipped throat-room, nurses' hall, maids' hall, interne's apartments, and ample diet kitchens. The building is heated by steam, on the vacuum system, and lighted by electricity. The usual machinery for compressed air, refrigeration, etc., is located in the basement. There is ample storage room and an autopsy chamber, also, in the basement. There is a hydraulic lift from the basement to the third-story, large enough to accommodate an ordinary hospital bed. There is also a dumb-waiter from the kitchens to the first and second floors. This division of the sanatorium is administered as a separate unit of the institution, and is situated about 200 yards south-west of the administration building, commanding a broad view of the surrounding country. This division of the Loomis Sanatorium was formally opened for the reception of patients in April, 1908. The building was designed by Messrs. Scopes and Feustmann, of Saranac Lake, New York, under the direction of the medical officers of the Loomis Sanatorium. Its cost complete, furnished and ready for occupancy, was approximately fifty thousand dollars."

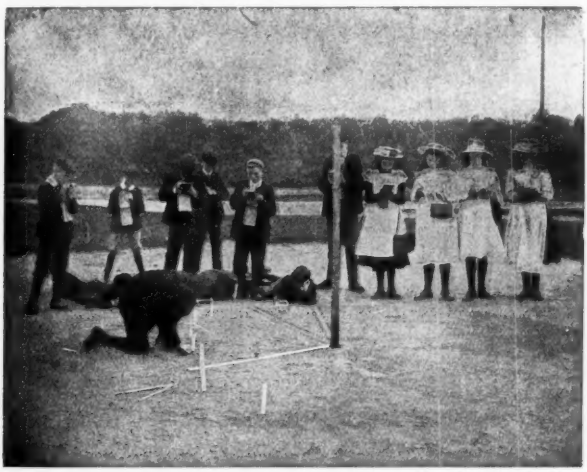
[1] We are indebted to the courtesy of the National Association of the United States for the Study and Prevention of Tuberculosis, 105, East Twenty-second Street, New York City, for permission to reproduce one of the posters which appears on p. 140. We would advise all leaders in the Anti-Tuberculosis Movement to procure the illustrated folding leaflet issued by the American Society, "The National Educational Billposter Campaign," which gives illustrations of the posters now being exhibited on the hoardings of the United States.—EDITOR, *B. J. T.*



ONE OF THE NORTH PORCHES IN THE MARY LEWIS RECEPTION HOSPITAL OF THE LOOMIS SANATORIUM.

OUTDOOR SCHOOLING FOR CHILDREN.

One of the most rational means for securing the prevention and arrest of tuberculosis is manifest in the movement whereby instruction is now being given to many children under strict hygienic conditions of life. The accompanying illustrations[1] indicate, better than any lengthy description can possibly do, the delights and educational advantages of schooling in the open air. We are glad to know that the number of open-air schools is likely to be considerably increased during the present summer. The excellent work accomplished by



THE OUTDOOR SCHOOL: A LAND-MEASURING CLASS.

the London County Council and some of our provincial educational authorities has fully established the open-air school in our educational system. The London County Council have recently approved a scheme whereby for a period of three years arrangements are to be made for a school for tuberculous children, to be conducted under the Elementary Education (Defective and Epileptic Children) Act, 1899, in premises to be provided and maintained by the Paddington Dispensary at Kensal House, Harrow Road.

[1] We are indebted to the courtesy and kindness of Mr. Edward Owen Greening, the editor of "One and All Gardening" Annual for 1910 (London: The Agricultural and Horticultural Association, Ltd., 92, Long Acre, W.C.; price 2d.) for the loan of the blocks illustrating the various forms of instruction for children in the open air. In this annual there is an excellent illustrated article on "The Outdoor School," by W. Frances Rankine, descriptions of American school gardens, and much other matter which will interest our readers. All open-air-lovers should procure a copy of Mr. Greening's wonderful little year-book.—EDITOR, *B. J. T.*

AN AMERICAN SCHOOL GARDEN.

THE SCHOOL GARDENS, WESTCOTT, NEAR DORKING, SURREY.

ANTI-TUBERCULOSIS TEACHING IN SCHOOLS.

Educationalists, so called, have in the past been keen to cram youthful minds with useless matter, and have been neglectful to convey the all-essential instruction as to righteous and wholesome living. It is to be hoped that this attitude will speedily pass. It is surprising, however, that, considering the ravages of tuberculosis among children, the little ones should not be given knowledge of the best means for protecting themselves. The National Association of America for the Study and Prevention of Tuberculosis have been looking into this matter. While tuberculosis does not cause as many deaths among school-children as it does among working men or among infants under five years of age, the National Association gives some figures to show how serious the disease is among this class. Based on the census of 1900, it is estimated that nearly 100,000 children now in school will die of tuberculosis before they are eighteen years of age, or that about 6,400 die annually from this disease. Estimating that on an average each child who dies of tuberculosis has had six years of schooling, the aggregate loss to the country in wasted education each year amounts to $1,152,000. According to investigations made in New York, Boston, and Stockholm, the percentage of children who are afflicted with tuberculosis is much larger than the death-rate would indicate. The United States National Association for the Study and Prevention of Tuberculosis very wisely urges that there are two ways of checking the ravages of tuberculosis among school-children. The first is to instruct every school-child concerning the dangers of the disease, and to show them how they themselves may prevent tuberculosis in their own homes. The second is to establish open-air schools for all children who have tuberculosis or who are suspected cases. We trust school doctors and all responsible for the care of children in this country will look into this matter. It would seem that definite instruction concerning the nature and methods of prevention of tuberculosis is being given to less than 6 per cent. of the public-school children of the United States. Recent investigation has shown that in only nine cities — Washington, D.C. ; Dallas, Tex. ; Richmond, Va. ; Poughkeepsie, N.Y. ; Detroit, Mich. ; Malden, Mass. ; Salem, Mass. ; Saginaw, Mich. ; and Knoxville, Tenn.—are special textbooks being used or lectures being given about tuberculosis. In three States and one Territory—Michigan, Massachusetts, North Carolina, and Porto Rico—laws have been passed requiring that instruction concerning the nature of and methods for preventing tuberculosis be given in all public schools. In Tennessee, the State Department of Education has requested that such instruction be given, and has issued circulars for this purpose. In New Jersey and West Virginia, wall-cards giving instruction are hung in every schoolroom, and the attention of all children is called to them. The actual number of children, however, who will this year be taught by their teachers that tuberculosis is a communicable, infectious disease, and that it can be prevented, will not exceed one million. If the State laws requiring such instruction were strictly enforced, at least two million children would be reached.

SELF-HELP FOR THE CONSUMPTIVE.

We would that all tuberculous patients might be provided with a copy of a charming little volume by Mr. Stanley H. Bates. As Sir James Crichton-Browne says in his Introduction: "This little book should be read not only by consumptives, to whom it is to prove a manual and guide, but by their relatives, so that they may not infringe the rules it lays down." It is an attractively-written portrayal of a courageous and successful experiment in self-help by a consumptive, and gives a detailed and graphic account of the construction and furnishing of, and conduct of life in, a home-made open-air shelter. The accompanying illustrations indicate the chief features of this effective and inexpensive provision for open-air treatment at home.[1] This work will be a boon to many.

THE EXTERIOR OF THE HOME SHELTER.

THE INTERIOR OF THE HOME SHELTER.

[1] We are indebted to the author for the loan of the blocks from which the above illustrations have been prepared. We trust they will induce many to procure this helpful manual, "Open Air at Home: Practical Experience of the Continuation of Sanatorium Treatment." By Stanley H. Bates. With an Introduction by Sir James Crichton-Browne, M.D., D.Sc., LL.D., F.R.S. Pp. 62, with 8 plates. Bristol: John Wright and Sons, Ltd. 1910. 2s. 6d. net. See review on p. 130 of the present number of this journal.

THE MEDICAL EXAMINATION OF SCHOOL-CHILDREN.

The passing of the Education (Administrative Provisions) Act, 1907, has opened a new field of service for child welfare. Dr. George Newman's first annual report marks the beginning of a new era.[1] This admirable "blue book" is epoch-marking. It should be read by every medical practitioner, educationalist, and all friends of children. It details conditions as they are, and points to states as they may be, and supplies particulars as to ways and means. Considerable attention is rightly devoted to tuberculosis. The percentage for routine cases is given as 1·02, but the view is expressed that "this figure is almost certainly too low." It is also stated that "it is possible, and, indeed, probable, that phthisis in an incipient stage exists among children to a greater extent than has as yet been suspected." A special section is devoted to "open-air schools." Dr. Newman is to be congratulated on his first report, the first of what we trust may be a long series.

To all desirous of obtaining a thoroughly comprehensive and reliable guide to the means whereby the physical and mental health of our school-children may be provided for, we would warmly commend Dr. Ralph Crowley's well-conceived and admirably executed manual.[2] For school doctors it will be invaluable, for it gives directions, suggestions, and warnings, all the outcome of practical experience, as to how medical inspection may best aid the child. Dr. Crowley is a thorough "progressive," but his conclusions are eminently sane, and his work may be entirely trusted as a safe guide. He has endeavoured to provide a manual which shall assist "local education authorities, medical officers, managers, and parents in trying to make the school medical service of this country as effective and useful as possible," and he has well attained his purpose. As regards pulmonary tuberculosis in scholars, Dr. Crowley very wisely remarks that "it is a common observation that children supposed to have consumption, and who are kept away from school for this reason, are quite free from the disease, while others, apparently robust and healthy, are victims." A plan and illustration of the Bradford Open-air School is given.

Among the many documents now being published regarding the physical and mental condition of school-children, we desire to draw special attention to the excellent and highly suggestive report of Dr. John C. Bridge, of the Carnegie Dunfermline Trust.[3] It is a model which might well be imitated.

PATHS OF PROGRESS.

Among all ranks of society, in almost all civilized countries, scientifically guided thought and rationally conducted action are securing new powers for the progress of the Anti-Tuberculosis Movement.

A movement has been initiated in the United States for the estab-

[1] Annual Report for 1908 of the Chief Medical Officer of the Board of Education. Pp. 169. [Cd. 4986.] London: Wyman and Sons, Ltd. 1910. Price 8½d.

[2] "The Hygiene of School Life." By Ralph H. Crowley, M.D., L.R.C.P. Pp. 443. With 17 illustrations. London: Methuen and Co. 1910. Price 3s. 6d.

[3] Fourth Annual Report on the Medical Inspection of School-Children in Dunfermline. 1909.

lishment of a "National Tuberculosis Sunday," on which day "it is hoped that every one of the 33,000,000 church-goers in the United States will hear the gospel of health." It is said that 215,000 churches are giving their support. April 24 is the date appointed.[1]

The Royal College of Physicians of London announce, in connection with the Weber-Parkes Prize and Medals, that a prize of 150 guineas and two silver medals will be awarded in 1912 for essays on "The Influence of Mixed and Secondary Infections upon Pulmonary Tuberculosis in Man, and the Measures, Preventive and Curative, for Dealing with Them." The essay must be based on original work and observations (experimental or other) of the author, and must include a detailed exposition of the methods employed and their mode of application. All essays, together with any preparations made in illustration of them, must be transmitted to the Registrar of the College, Dr. J. A. Ormerod, Pall Mall East, S.W., during the last week of May, 1912, in accordance with the regulations relating thereto, copies of which will be forwarded from the College on application. The award will be made on some day previous to October 18 in that year.

We are glad to welcome *School Hygiene*, a new monthly review "for educationists and doctors," which promises to be of real value in directing medical advisers and inspectors regarding all matters relating to the health of school-going children.[2]

The School-Child[3] is another monthly which will be of service to those interested in, and working for, the welfare of school-children.

The new *Local Government Review*[4] promises to be a helpful addition to the rapidly growing periodical literature devoted to affairs concerned with public health and social betterment.

All interested in open-air schools will do well to obtain the report of the successful experiment at Chicago.[5]

The first volume of a new series of "National Health Manuals" has just been issued, and deals with "Infancy," each of its twelve chapters being written by a well-known medical expert.[6] Subsequent volumes of the series will treat on "Childhood," "The School-Child," "Youth," "Parenthood," "Mature Life," "Mental Hygiene," "Home Sanitation," "Environment and Occupation," "Hygienic Habits," "Preventable Diseases," and "National Health Problems." These medico-sociological manuals are intended for all classes of social workers, and are to be issued at the popular price of 1s. net each.

A very striking and well-illustrated pamphlet has been issued in

[1] Press Service of the National Association for the Study and Prevention of Tuberculosis: Dr. Livingston Farrand, Executive Secretary, and Phil. P. Jacobs, Assistant Secretary, 105, East Twenty-second Street, New York City.

[2] *School Hygiene* is published by the School Hygiene Publication Company, Ltd., 2, Charlotte Street, London, W. Monthly, 6d. net.

[3] *The School-Child* is published by Miss M. C. Strachey, 67, Belsize Park Gardens, London, N.W. Annual subscription 1s. 6d., post free.

[4] *The Local Government Review* is published monthly by Messrs. Simpkin, Marshall, Hamilton, Kent and Co., Ltd., 4, Orange Street, Haymarket, London, W.C. Annual subscription, 13s. post free.

[5] "Chicago's First Outdoor School for Tuberculous Children." Pp. 13. With illustrations. Issued by the Chicago Tuberculosis Institute. 1909.

[6] "Infancy." The first volume of the "National Health Manuals." Edited by T. N. Kelynack, M.D. Pp. vi+186. 1910. Price, cloth limp, 1s. net; cloth boards, 1s. 6d. net. See review, p. 131, of this present number.

New York as a plea and an argument for the adoption of more active anti-tuberculosis measures.[1] It would serve as a useful model for similar publications in this and other countries.

Dr. J. F. J. Sykes has just issued an excellent four-page card of "Advice to Consumptives" which might well serve as a model to be followed by many other Medical Officers of Health.[2]

The recently-issued illustrated report of a year's work to control tuberculosis in Brooklyn is full of helpful suggestions, and contains copies of several striking anti-tuberculosis posters.[3]

The Editor of this Journal has contributed a survey of the past year's anti-tuberculosis work to the new number of the Official Year-Book of the Charity Organization Society.[4]

The Tramp is a new journal which should be appreciated by our readers. It professes to be "an open-air magazine," and is in every way peculiarly attractive. The illustrations are excellent. Every sanatorium should subscribe to this novel periodical.[5]

The Third Annual Report of the Apprenticeship and Skilled Employment Association gives particulars of the work of its "After-care Committee for Blind, Deaf, and Cripple Children."[6] We could wish that this good enterprise could undertake the oversight of many more of London's tuberculous little ones.

The Survey, in a recent issue,[7] gave several well-illustrated articles on "Open-air Schools." Such descriptions should stimulate the formation of these rational hygienic and educational establishments not only in America, but throughout the British Empire.

"Winter Sports Annual, 1909-10," now in its fourth year of issue, provides an excellent illustrated guide to winter stations in Switzerland, Scandinavia, Austria, Germany, and elsewhere, which doctors and others will find invaluable as a reliable reference work when selecting or advising a centre for a mid-winter holiday.[8]

The Mendel Journal is a new periodical which we are glad to welcome.[9] It has been founded not only to afford a medium for the proper exposition of this new department of the "Humanities," but to provide a means where further data relating to the science of genetics may be harvested and rendered available to workers of all schools.

[1] "Tuberculosis Needs and the City Budget: Why the Health Department Needs More Money for Tuberculosis." Issued by the Committee on the Prevention of Tuberculosis of the Charity Organization Society, New York City.

[2] "Advice to Consumptives." Issued by the Public Health Department of the St. Pancras Borough Council.

[3] The First Annual Report of the Brooklyn Committee on Prevention of Tuberculosis, Brooklyn, New York: 69, Schermerhorn Street. 1909.

[4] "The Arrest of Tuberculosis." By T. N. Kelynack, M.D. The nineteenth edition of "The Annual Charities Register and Digest." London: Longmans, Green and Co., and the Charity Organization Society, Denison House, 296, Vauxhall Bridge Road, S.W. 1910. Price 5s. net.

[5] *The Tramp* is published by The Adelphi Press, Ltd., 11, Adam Street, Adelphi, W.C. 6d. monthly.

[6] Full particulars on application to the Apprenticeship and Skilled Employment Association, 36, Denison House, 296, Vauxhall Bridge Road, London, S.W.

[7] *The Survey*, March 5, 1910. New York: 105, East Twenty-second Street. Price 25 cents.

[8] "Winter Sports Annual, 1909-10." Edited by E. Wroughton. Pp. 152. With illustrations and maps. London: 1, Mitre Court, Fleet Street, E.C. 1909. Price 2s.

[9] *The Mendel Journal.* No 1. October, 1909. Pp. 216. Printed and published for the Mendel Society by Taylor, Garnett, Evans, and Co., Ltd., 54, Fleet Street, London, E.C. Price 2s. 6d. net.